



**YAMAHA**

**YZ80J**

*[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)*

**OWNER'S MANUAL**

**TUNING AND SERVICE**

## IMPORTANT NOTICE

THIS MACHINE IS DESIGNED STRICTLY FOR COMPETITION USE ONLY. IT IS ILLEGAL TO OPERATE THIS VEHICLE ON STREET. OFF ROAD USE ON PUBLIC LAND MAY BE ILLEGAL. PLEASE CHECK YOUR LOCAL RIDING AREA REGULATIONS. SUSPENSION ON THIS MACHINE CAN BE ADJUSTED TO ACCOMMODATE DIFFERING RIDER WEIGHTS AND TECHNIQUE.

**1. GASOLINE IS HIGHLY FLAMMABLE:**

- \* Always turn off the engine when refueling.
  - \* Take care not to spill on the engine or exhaust pipe/muffler, when refueling.
  - \* Never refuel while smoking or in the vicinity of an open flame.
2. If you should swallow some gasoline or inhale a lot of gasoline vapor, or allow some gasoline to get in your eye(s), see your doctor immediately. If any gasoline spills on your skin or clothing, immediately wash it with soap and water, and change your clothes.
3. Always turn off the engine before leaving the machine unattended. When parking the machine, note the followings.
- \* The engine and exhaust pipe/muffler may be hot. Park the machine in a place where pedestrians or children are not likely to touch the machine.
  - \* Do not park the machine on a slope or soft ground; the machine may overturn.
4. When transporting the machine in another vehicle, be sure it is kept upright and that the fuel cock is turned to the "OFF" position. If it should lean over, gasoline may leak out of the carburetor or fuel tank.
5. Never start your engine or let it run for any length of time in a closed area. The exhaust fumes are poisonous and may cause loss of consciousness and death within a short time. Always operate your machine in an area with adequate ventilation.
6. Always wear a helmet, gloves, boots, MX's trousers and jacket.
7. The sidestand should be removed whether in races or practice.

YZ80J

**OWNER'S MANUAL  
TUNING AND SERVICE**

© 1981 by Yamaha Motor Corporation, U.S.A.

1st edition, August 1981

All rights reserved. Any reprinting or  
Unauthorized use without the written  
permission of Yamaha Motor Corporation,  
U.S.A. is expressly prohibited.

P/N LIT-11626-03-18



## TO THE NEW OWNER

This manual will provide you with a good basic understanding of features, operation, and basic maintenance and inspection items of this vehicle.

PLEASE READ THIS MANUAL CAREFULLY AND COMPLETELY BEFORE OPERATING YOUR NEW MACHINE. If you have any questions regarding the operation or maintenance of your machine, please consult your Yamaha dealer.

Particularly important information is distinguished in this manual by the following notations.

**NOTE:** A NOTE provides key information to make procedures easier or clearer.

**CAUTION:** A CAUTION indicates special procedures that must be followed to avoid damage to the machine.

**WARNING:** A WARNING indicates special procedures that must be followed to avoid injury to a machine operator or person inspecting or repairing the machine.

## NOTICE

Some data in this manual may become outdated due to improvements made to this model in the future. If there is any question you have regarding this manual or your machine, please consult your Yamaha dealer.

SERVICE DEPT.  
INTERNATIONAL DIVISION  
YAMAHA MOTOR CO., LTD.

# INDEX

**GENERAL INFORMATION**

**1**

**REGULAR MAINTENANCE  
AND ADJUSTMENTS**

**2**

**SUSPENSION TUNING**

**3**

**ENGINE MAINTENANCE AND  
REPAIR**

**4**

[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)

**CHASSIS MAINTENANCE  
AND REPAIR**

**5**

**ELECTRICAL  
TROUBLESHOOTING**

**6**

**APPENDICES**

**7**



# TABLE OF CONTENTS

<b>1</b>	<b>GENERAL INFORMATION</b>	
	MACHINE IDENTIFICATION .....	1-1
	CONTROL FUNCTION .....	1-1
	FUEL AND OIL .....	1-5
	COOLANT .....	1-6
	PRE-OPERATION CHECKS .....	1-7
	STARTING AND BREAK-IN .....	1-7
	CLEANING AND STORAGE .....	1-9
<b>2</b>	<b>REGULAR MAINTENANCE AND ADJUSTMENT</b>	
	MAINTENANCE INTERVALS CHART .....	2-1
	LUBRICATION .....	2-3
	SPECIAL TOOLS .....	2-5
	MINOR MAINTENANCE AND ADJUSTMENT .....	2-7
<b>3</b>	<b>SUSPENSION TUNING</b>	
	FRONT FORKS .....	3-1
	REAR SHOCK .....	3-3
	COMPATIBILITY CHART .....	3-6
<b>4</b>	<b>ENGINE MAINTENANCE AND REPAIR</b>	
	PREPARATION FOR SERVICE .....	4-1
	DISASSEMBLY, INSPECTION AND ASSEMBLY .....	4-2
	COOLING SYSTEM .....	4-19
<b>5</b>	<b>CHASSIS MAINTENANCE AND REPAIR</b>	
	WHEEL ASSEMBLIES, SPROCKETS AND CHAIN .....	5-1
	FRONT FORK .....	5-5
	STEERING HEAD .....	5-5
	REAR SHOCK .....	5-8
	SWINGARM .....	5-11
<b>6</b>	<b>ELECTRICAL TROUBLESHOOTING</b>	
	IGNITION SYSTEM .....	6-1
	WIRING DIAGRAM .....	6-4
<b>7</b>	<b>APPENDICES</b>	
	TRUBLESHOOTING GUIDE .....	7-1
	SPECIFICATIONS .....	7-6
	DEFINITION OF UNITS .....	7-14
	CONVERSION TABLES .....	7-14
	CABLE ROUTING DIAGRAM .....	7-15
	WARRANTY INFORMATION .....	7-18

# **1 GENERAL INFORMATION**

<b>MACHINE IDENTIFICATION</b> .....	1-1
Frame serial number .....	1-1
Engine serial number .....	1-1
<b>CONTROL FUNCTIONS</b> .....	1-1
Note on handling of the Yamaha Energy Induction System .....	1-1
Engine stop switch .....	1-3
Fuel cock .....	1-3
Front brake lever .....	1-3
Rear brake lever .....	1-3
Clutch lever .....	1-3
Change pedal .....	1-4
Starter knob (Choke) .....	1-4
Kick starter .....	1-4
Fuel tank cap .....	1-4
<b>FUEL AND OIL</b> .....	1-5
Fuel .....	1-5
Engine mixing oil .....	1-5
Transmission oil .....	1-5
<b>COOLANT</b> .....	1-6
Coolant level .....	1-6
<b>PRE-OPERATION CHECKS</b> .....	1-7
<b>STARTING AND BREAK-IN</b> .....	1-7
Starting a cold engine .....	1-7
Starting a warm engine .....	1-7
Break-in procedures .....	1-8
<b>CLEANING AND STORAGE</b> .....	1-9
Cleaning .....	1-9
Storage .....	1-9

[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)



# 1 GENERAL INFORMATION

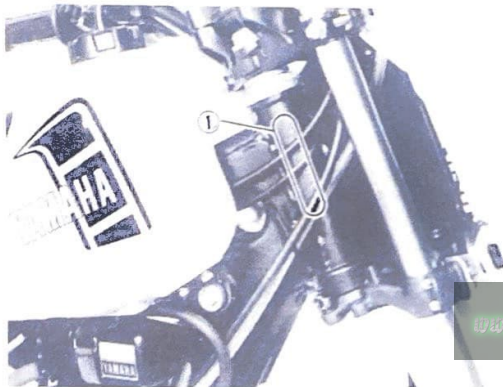
## MACHINE IDENTIFICATION

There are two significant reasons for knowing the serial number of your machine:

1. When ordering parts, you can give the number to your Yamaha dealer for positive identification of the model you own.
2. If your bike is stolen, the authorities will need the number to search for and identify your machine.

### Frame serial number

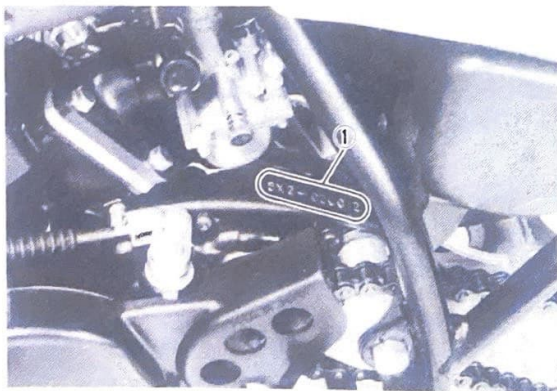
The frame serial number is stamped into the right of the steering head pipe.



1. Frame serial number

### Engine serial number

The engine serial number is stamped into the left side of the engine on top of the crankcase.



1. Engine serial number

## CONTROL FUNCTIONS

### WARNING:

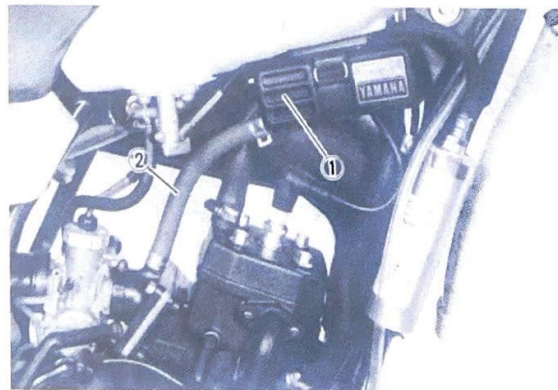
Before riding this machine, become thoroughly familiar with all the operating controls and their functions. If there are any controls which you do not understand, consult your Yamaha dealer.

### NOTICE:

This machine is designed strictly for competition use only. It is not equipped with highway approved lighting. Off-road use on public land may be illegal.

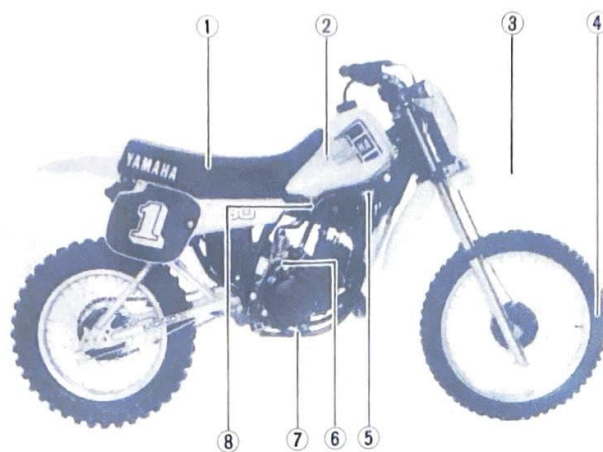
### Note on handling of the Yamaha Energy Induction System (Y.E.I.S.)

Handle the air chamber and hose with special care. Improper installation or damaged parts will result in poor performance. Replace any cracked or damaged parts immediately. No modification of this system in any form is not allowed.



1. Air chamber

2. Hose



- 1. Seat
- 2. Fuel tank
- 3. Front fender
- 4. Front wheel

- 5. Y.E.I.S.
- 6. Kick starter
- 7. Brake pedal
- 8. Fuel cock



- 1. Front fork
- 2. Muffler
- 3. Rear wheel

- 4. Sidestand
- 5. Footrest
- 6. Shift pedal



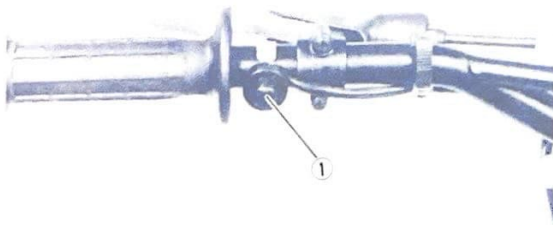
- 1. Clutch lever
- 2. Front brake lever

- 3. Throttle
- 4. Engine stop switch



### **"ENGINE STOP" switch**

The engine stop switch is a safety device for use in an emergency such as when the motorcycle overturns or when trouble occurs in the throttle system.



1. "ENGINE STOP" switch

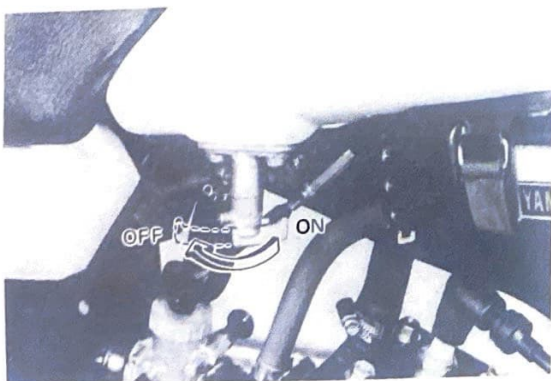
### **Fuel cock**

The fuel cock functions to supply fuel from the tank to the carburetor and also to filter the fuel.

The fuel cock has the following two positions:

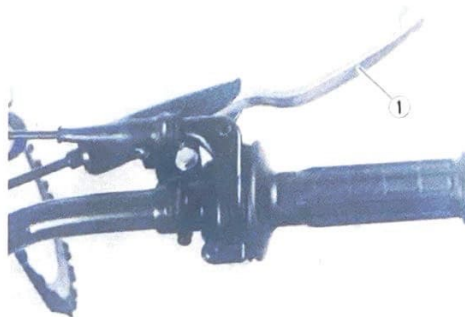
**OFF:** With the lever in this position fuel will not flow. Return the lever to this position when the engine is not running.

**ON:** With the lever in this position fuel flows to the carburetor. Normal riding is done with the lever in this position.



### **Front brake lever**

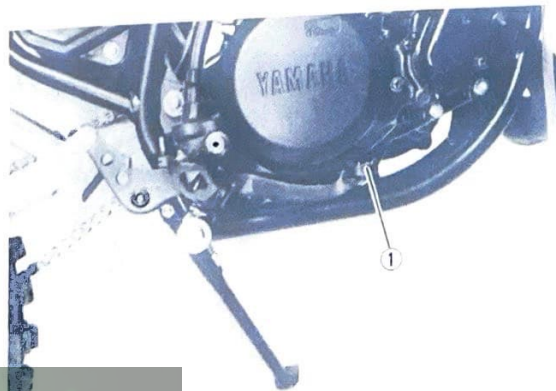
The front brake lever is located on the right handlebar, pull it toward the handle bar to activate the front brake.



1. Front brake lever

### **Rear brake pedal**

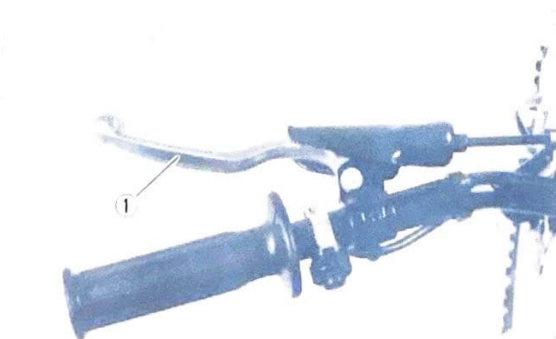
The rear brake pedal is in front of right footrest. Press down on the brake pedal to activate the rear brake.



1. Rear brake pedal

### **Clutch lever**

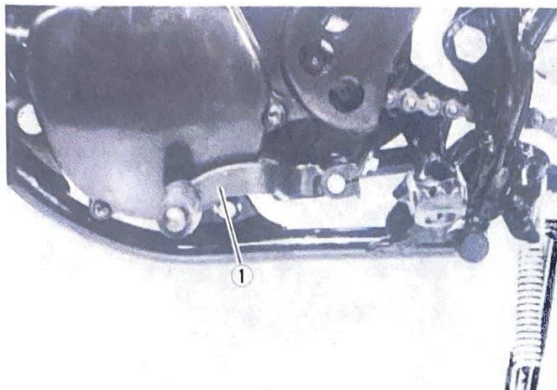
The clutch lever is located on the left handlebar; it disengages or engages the clutch. Pull the clutch lever to the handlebar to disengage the clutch, and release the lever to engage the clutch. The lever should be pulled rapidly and released slowly for smooth starts.



1. Clutch lever

### Shift pedal

The gear ratios of the constant mesh 6-speed transmission are ideally spaced. The gears can be shifted by using the shift pedal on the left side of the engine.

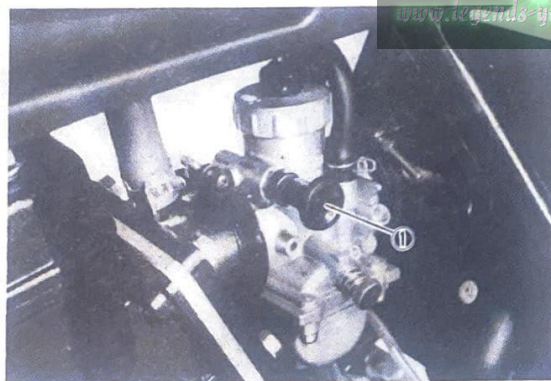


1. Shift pedal

### Starter knob (choke)

When cold, the engine requires a richer air fuel mixture for starting. A separate starter circuit, which is controlled by the starter knob, supplies this mixture.

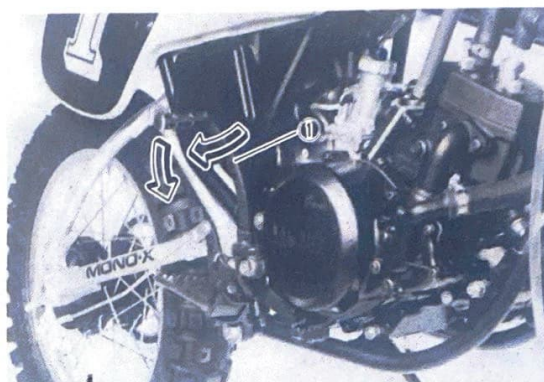
Pull the knob out to open the circuit (for starting) and push the knob in to close the circuit.



1. Starter knob

### Kick starter

Rotate the kick starter away from the engine. Push the kick starter down lightly with foot until the gears engage, then kick smoothly and forcefully to start the engine. This model has a primary kick starter so the engine can be started in gear if the clutch is disengaged. In normal practice, however, shift to neutral before starting.



1. Kick starter

### Fuel tank cap

Remove the fuel tank breather pipe from fuel tank cap.

Then remove the fuel tank cap by turning counterclockwise.

### WARNING:

Do not overfill the fuel tank. Avoid spilling fuel on the hot engine.

Do not fill the fuel tank all the way to the top or it may overflow when the fuel heats up later and expands.

Keep the breather pipe from clogging or fouling.



## FUEL AND OIL

### Fuel

Use premium fuel with an octane rating of at least 90. Mix oil with the gas at the ratio specified below. Always use fresh, name-brand gasoline, and mix the oil and gas the day of the race. Do not use premix that is more than a few hours old.

Fuel tank capacity:  
5.2 L (1.1 Imp gal, 1.4 US gal)

### Engine mixing oil

Oil must be mixed with the gasoline to lubricate the piston, cylinder, crankshaft bearings, and connecting rod bearings.

Recommended oil: Yamalube "R"  
(Yamalube Racing 2-cycle oil)  
Mixing ratio: 24 : 1

If for any reason you should use another type, select from the following list.

\* Castrol R30  
Mixing ratio: 20 : 1

### CAUTION:

Never mix two types of oil in the same batch; clotting of the oil could result. If you wish to change oil types, be sure to drain the fuel tank and the carburetor float bowl of old premix prior to filling with the new type.

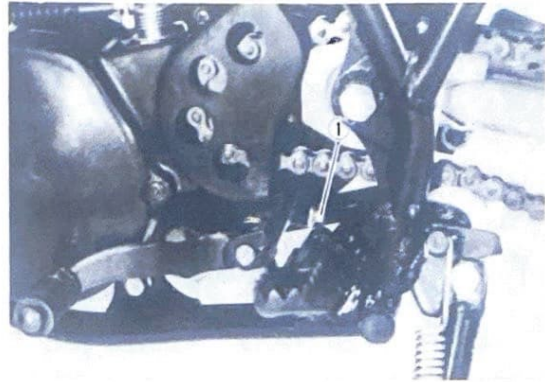
### Transmission oil

Recommended oil:  
Yamalube 4-cycle oil or  
SAE 10W30 SE motor oil

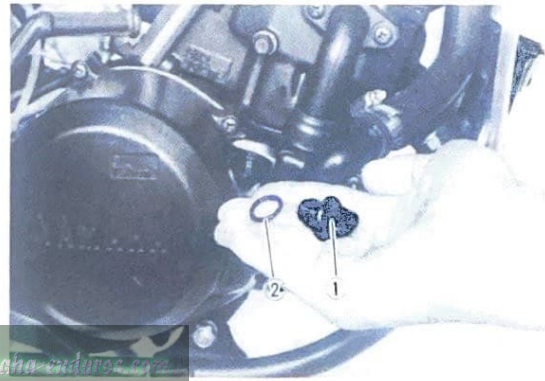
Transmission oil capacity:  
Periodic oil change:  
0.625 ~ 0.675 L  
(0.55 ~ 0.59 Imp qt, 0.66 ~ 0.71 US qt)  
Total amount:  
0.675 ~ 0.725 L  
(0.59 ~ 0.64 Imp qt, 0.71 ~ 0.77 US qt)

## OIL REPLACEMENT

To drain the oil, warm the engine up and remove the drain plug and drain all transmission oil. Reinstall the drain plug (make sure it is secure). Add oil through the hole.



1. Drain plug



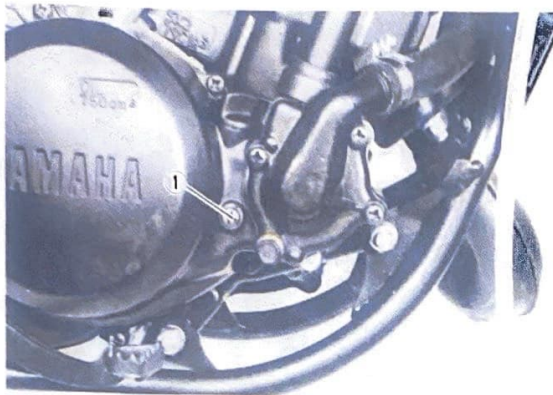
1. Filler plug 2. O-ring

## OIL LEVEL CHECK

On the right side of the engine there is a checking screw. To check, warm up the engine for 2 ~ 3 minutes. Place the machine upright and remove the oil level checking screw. If oil flows out, the oil level is correct.

### CAUTION:

Do not add any chemical additives. Transmission oil also lubricates the clutch and additives could cause the clutch to slip.



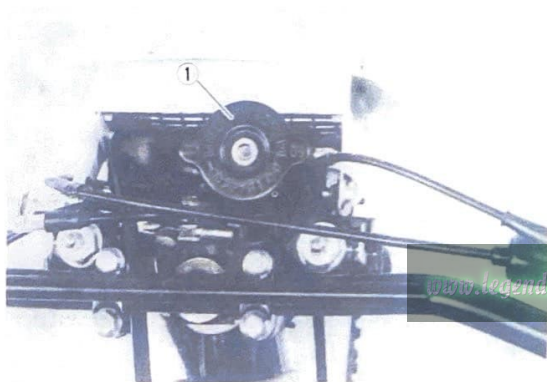
1. Checking screw

## COOLANT

### Coolant level

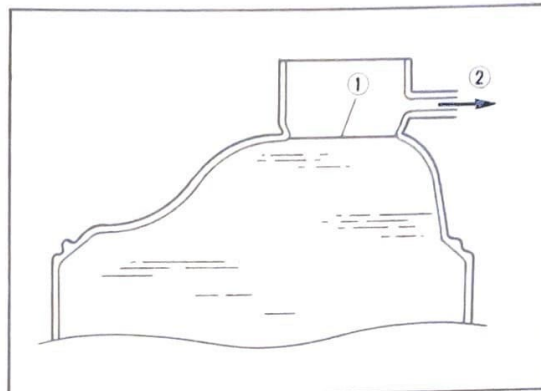
#### **WARNING:**

Do not remove the radiator cap, especially when the engine and radiator are hot.



1. Radiator cap

Check the coolant level in the radiator tank when the engine is cold. If the coolant level is low, add the coolant.



1. Collant level

2. Breather pipe

#### Recommended coolant:

High quality ethylene glycol anti-freeze containing corrosion inhibitors for aliminum engine

#### Coolant and water mixed ratio:

1 : 1 (50% water, 50% coolant)

See cooling system section, paragraph "Coolant drain" page 4-19.

## PRE-OPERATION CHECKS

The following items should be checked before each use of the machine. These checks can be accomplished thoroughly in a very short time; the added safety they can assure is well worth the effort.

Item	Procedure	Page
Brakes	Check operation/adjustment	2-11
Clutch	Check operation/adjustment	2-11
Fuel tank	Fill with proper fuel/oil mix	1-15
Transmission oil	Check oil level/change oil as required	1-15
Radiator, cooling system	Check coolant level, leakage/top-up as required	1-16
Drive chain	Check alignment/adjustment/lubrication	2-12
Spark plug	Check color and condition/replace as required	2-7
Throttle	Check for proper cable operation	2-9
Air filter	Foam type – must be clean and damp with oil always	2-10
Wheels & tires	Check pressure/runout/spoke tightness/axle nuts	2-14
Fittings/fasteners	Check all/tighten as necessary	—

## STARTING AND BREAK-IN

### CAUTION:

Before starting the machine, perform the checks in the pre-operation check list.

### CAUTION:

Do not warm up the engine for extended periods.

### WARNING:

Never start or run the engine in a closed area. The exhaust fumes are poisonous; they can cause loss of consciousness and death in a very short time. Always operate the machine in a well-ventilated area.

### Starting a warm engine

Do not pull the starter knob. Open the throttle slightly and kickstart the engine with a smooth, firm stroke.

### CAUTION:

Observe the following break-in procedures during initial operation to ensure optimum performance and avoid engine damage.

### Starting a cold engine

Shift the transmission into neutral. Turn on the fuel cock and pull the starter knob on the carburetor. With the throttle completely closed, kick start the engine with a smooth, firm stroke. Using the starter knob as required, run the engine at idle or slightly higher until it warms up; this usually takes about one or two minutes. The engine is warmed up when it responds normally to the throttle with the starter knob pushed completely.



### Break-in procedures

1. Before starting the engine, fill the fuel tank with a break-in oil-fuel mixture oil 12 : 1 to 14 : 1.
2. Perform the pre-operation checks on the machine.
3. Start and warm up the engine. Check the idle speed, and check the operation of the controls and the engine stop switch.
4. Operate the machine in the lower gears at moderate throttle openings for five to eight minutes. Stop and check the spark plug condition; it will show a rich condition during break-in.
5. Allow the engine to cool. Restart the engine and operate the machine as in the step above for five minutes. Then, very briefly shift to the higher gears and check full-throttle response. Stop and check the spark plug.
6. After again allowing the engine to cool, restart and run the machine for five more minutes.  
Full throttle and the higher gears may be used, but sustained full-throttle operation should be avoided. Check the spark plug condition.
7. Allow the engine to cool. Drain the coolant and remove cylinder head and inspect. For disassembly, refer to page 4-8. Remove "high" spots on piston with No. 600 grit, wet sandpaper. Clean and carefully reassemble.
8. Remove break-in fuel/oil mixture from tank. Refill with specified operation fuel/oil mixture. Check entire unit for loose or mis-adjusted fittings/controls/fasteners. Pour the recommended coolant into the radiator (Refer to page 4-19).
9. Restart the engine and check the operation of the machine throughout its entire operating range. Stop and check the spark plug condition. Restart the machine and operate it for about 10 to 15 more minutes. The machine will now be ready to race.

### CAUTION:

1. After the break-in period is completed, check the entire machine for loose fittings and fasteners. Tighten all such fasteners as required.
2. When any of the following parts has been replaced, it must be broken in.  
**CYLINDER AND CRANKSHAFT**  
About one hour of break-in operation is necessary.  
**PISTON, RINGS, GEARS**  
These parts require about 30 minutes of break-in operation at half-throttle or less. Observe the condition of the engine carefully during operation.

## CLEANING AND STORAGE

### Cleaning

Frequent cleaning of your machine will enhance its appearance, maintain good overall performance, and extend the life of many components.

1. Before washing the machine, block off the end of the exhaust pipe to prevent water from entering. A plastic bag secured with a rubber band may be used for this purpose.
2. If the engine is excessively greasy, apply some degreaser to it with a paint brush. Do not apply degreaser to the chain, sprockets, or wheel axles.
3. Rinse the dirt and degreaser off with a garden hose; use only enough pressure to do the job.

### CAUTION:

Excessive hose pressure can force water into wheel bearings, front fork seals, brake drums, and transmission seals. Avoid using high-pressure hoses such as those found in coin-operated car washes.

4. After the majority of the dirt has been hosed off, wash all surfaces with warm water and a mild detergent. Use an old toothbrush to clean hard-to-reach places.
5. Rinse the machine off immediately with clean water, and dry all surfaces with a soft towel or cloth.
6. Immediately after washing, remove excess water from the chain with a paper towel and lubricate the chain to prevent rust.
7. Clean the seat with a vinyl upholstery cleaner to keep the cover pliable and glossy.
8. Automotive wax may be applied to all painted or chromed surfaces. Avoid combination cleaner-waxes, as they may contain abrasives.
9. After completing the above, start the engine and allow it to idle for several minutes.

### Storage

If your machine is to be stored for 60 days or more, some preventive measures must be taken to avoid deterioration. After cleaning the machine thoroughly, prepare it for storage as follows:

1. Drain the fuel tank, fuel lines, and the carburetor float bowl.
2. Remove the spark plug, pour a tablespoon of SAE 10W30 motor oil in the spark plug hole, and reinstall the plug. With the engine stop switch pushed in, kick the engine over several times to coat the cylinder walls with oil.
3. Remove the drive chain, clean it thoroughly with solvent, and lubricate it. Reinstall the chain or store it in a plastic bag tied to the frame.
4. Lubricate all control cables.
5. Block up the frame to raise both wheels off the ground.
6. Tie a plastic bag over the exhaust pipe outlet to prevent moisture from entering.
7. If the machine is to be stored in a humid or salt-air environment, coat all exposed metal surfaces with a film of light oil. Do not apply oil to rubber parts or the seat cover.

### NOTE:

Make any necessary repairs before the machine is stored.

## **2** REGULAR MAINTENANCE AND ADJUSTMENT

MAINTENANCE INTERVALS CHART . . . . .	2-1
LUBRICATION . . . . .	2-3
SPECIAL TOOLS . . . . .	2-5
Dial gauge . . . . .	2-5
Dial gauge stand . . . . .	2-5
Dial gauge extension . . . . .	2-5
Steering nut wrench . . . . .	2-5
Fork cylinder holder and adapter . . . . .	2-5
Clutch holding tool . . . . .	2-5
Timing light . . . . .	2-6
Point tester . . . . .	2-6
MINOR MAINTENANCE AND ADJUSTMENTS . . . . .	2-7
Spark plug . . . . .	2-7
Ignition timing . . . . .	2-7
Throttle cable . . . . .	2-9
Idle speed . . . . .	2-9
Air filter . . . . .	2-10
Clutch . . . . .	2-11
Front brake . . . . .	2-11
Rear brake . . . . .	2-11
Drive chain . . . . .	2-12
Steering head . . . . .	2-13
Tire air pressure . . . . .	2-14
Tuning guidance . . . . .	2-14
Spokes . . . . .	2-14



## 2 REGULAR MAINTENANCE AND ADJUSTMENT

### MAINTENANCE INTERVALS CHART

The following schedule is intended as a general guide to maintenance and lubrication. Bear in mind that such factors as weather, terrain, geographical location, and individual usage will alter the required maintenance and lubrication intervals. If you are in doubt as to what intervals to follow in maintaining and lubricating your machine, consult your Yamaha dealer.

Item	Every race	Every second race	Every third race	Every fifth race	As required	Recommend lubricant
Piston:						
Clean/Inspect crack & seizure	○					
Replace				○		
Piston ring:						
Replace		○				
Cylinder head:						
Inspect warp	○					
Clean/Retighten	○					
Cylinder:						
Clean/Inspect warp	○					
Replace					○	
Retighten	○					
Clutch:						
Adjust			○			
Inspect plates/Bolts		○				
Replace					○	
Transmission:						
Change oil				○		Yamalube 4-cycle oil SAE 10W30 SE motor oil
Inspect gears and shift fork				(○)	○	
Replace bearing					○	
Engine main bearing:						
Inspect wear/damage				○		
Connecting-rod:						
Inspect bearings				○		
Replace					○	
Piston pin:						
Inspect heat damage/wear				○		
Replace					○	
CDI rotor nut:						
Retighten				○		
Kick starter:						
Inspect idle gear					○	
Replace					○	
Exhaust system:						
Inspect crack/mounting	○					
Cleaning				○		
Carburetor:						
Inspect/Adjust	○					
Clean/Retighten	○					
YEIS:						
Inspect	○					

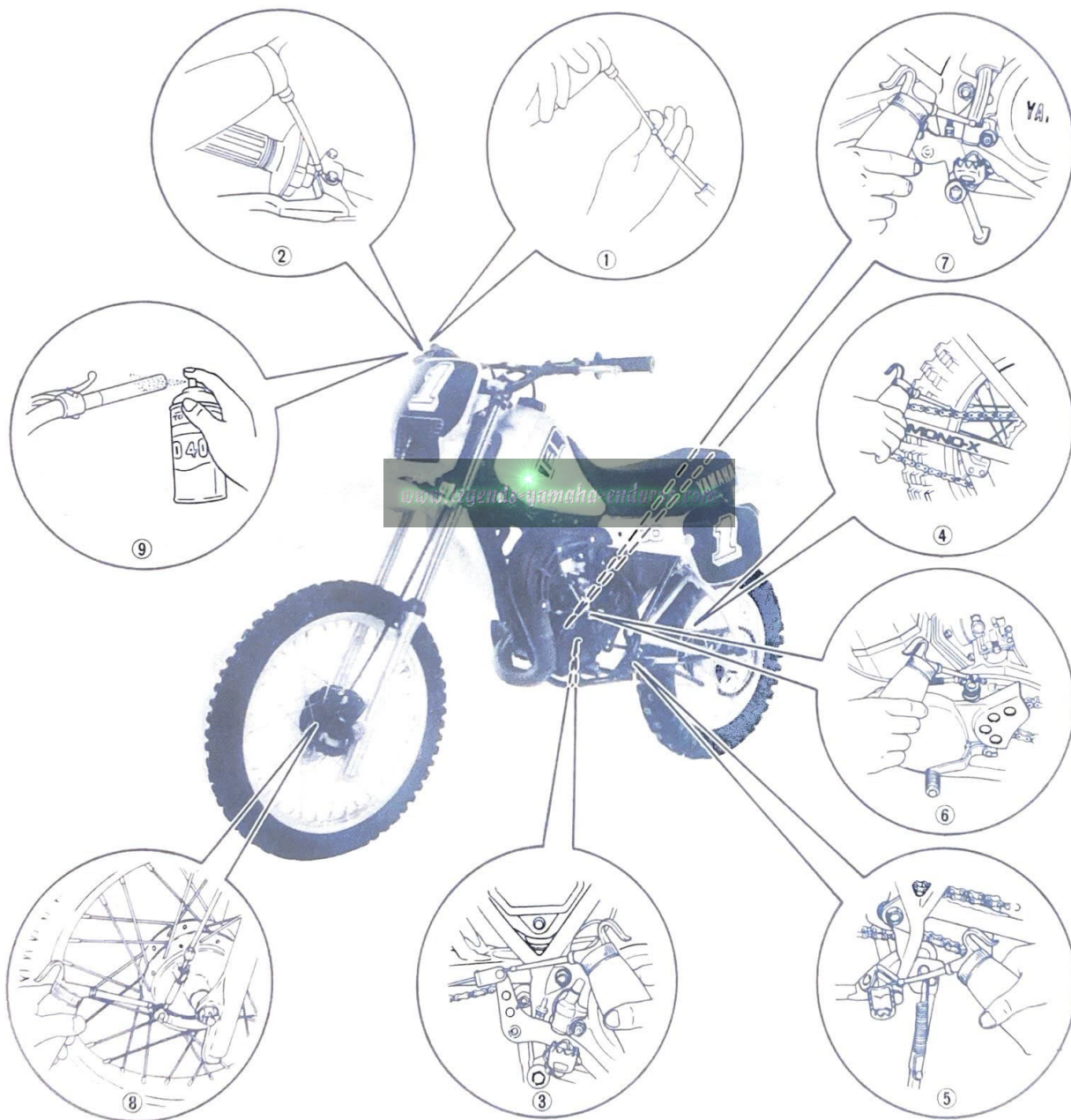
Item	Every race	Every second race	Every third race	Every fifth race	As required	Recommended lubricant
Air filter:						Air filter must be cleaned and damp with oil after every race. Do not over-oil. Use SAE 10W30 motor oil.
Clean and lube	○					
Replace					○	
Spark plug:						
Inspect condition	○					
Replace					○	
Drive chain:						a. Yamaha Chain and Cable Lube b. SAE 10W30 motor oil
Clean and lube	○					
Check tension and alignment	○					
Replace					○	
Cooling system:						Recommended coolant: High quality ethylene glycol antifreeze containing corrosion inhibitors for aluminum engine Coolant and water mixed ratio: 1 : 1 (50% water, 50% coolant)
Check leakage	○					
Replace coolant					○	
Inspect hoses for cracks/damage	○					
Retighten hose clamps	○					
Frame:						
Clean/Inspect crack	○					
Fuel tank/fuel cock						
Clean					○	
Front fork:						Yamaha Fork oil or SAE #20 motor oil
Change oil				Initial 5	10 race	
Replace seal					○	
Rear shock absorber:						
Inspect/Adjust	○					
Lube pivot shaft/seal	○					
Steering head:						Medium-weight wheel bearing grease of quality manufacture (preferable waterproof)
Inspect free play/Adjust	○					
Clean/Lube bearing					○	
Replace bearings					○	
Swingarm:						Medium-weight wheel bearing grease of quality manufacture (preferable waterproof)
Inspect crack/free play	○					
Lube pivot shaft/seal				○		
Chain guard:						Chain roller, guard and tensioner
Replace					○	
Wheels and tires:						
Check pressure/Runout/Spoke tension/ Bead stopper nut	○					
Inspect bearings	○					
Lube oil seal			○			
Replace bearings					○	
Throttle:						
Inspect/Lube	○					
Control cables:						
Routing (Connection)	○					SAE 10W30 motor oil
Inspect/Lube	○					
Clutch and brake lever pivot:						SAE 10W30 motor oil
Lube/Retighten	○					

## LUBRICATION

To ensure smooth operation of all components, lubricate your machine as follows after every race.

A. Use Yamaha chain and cable lube on these areas:

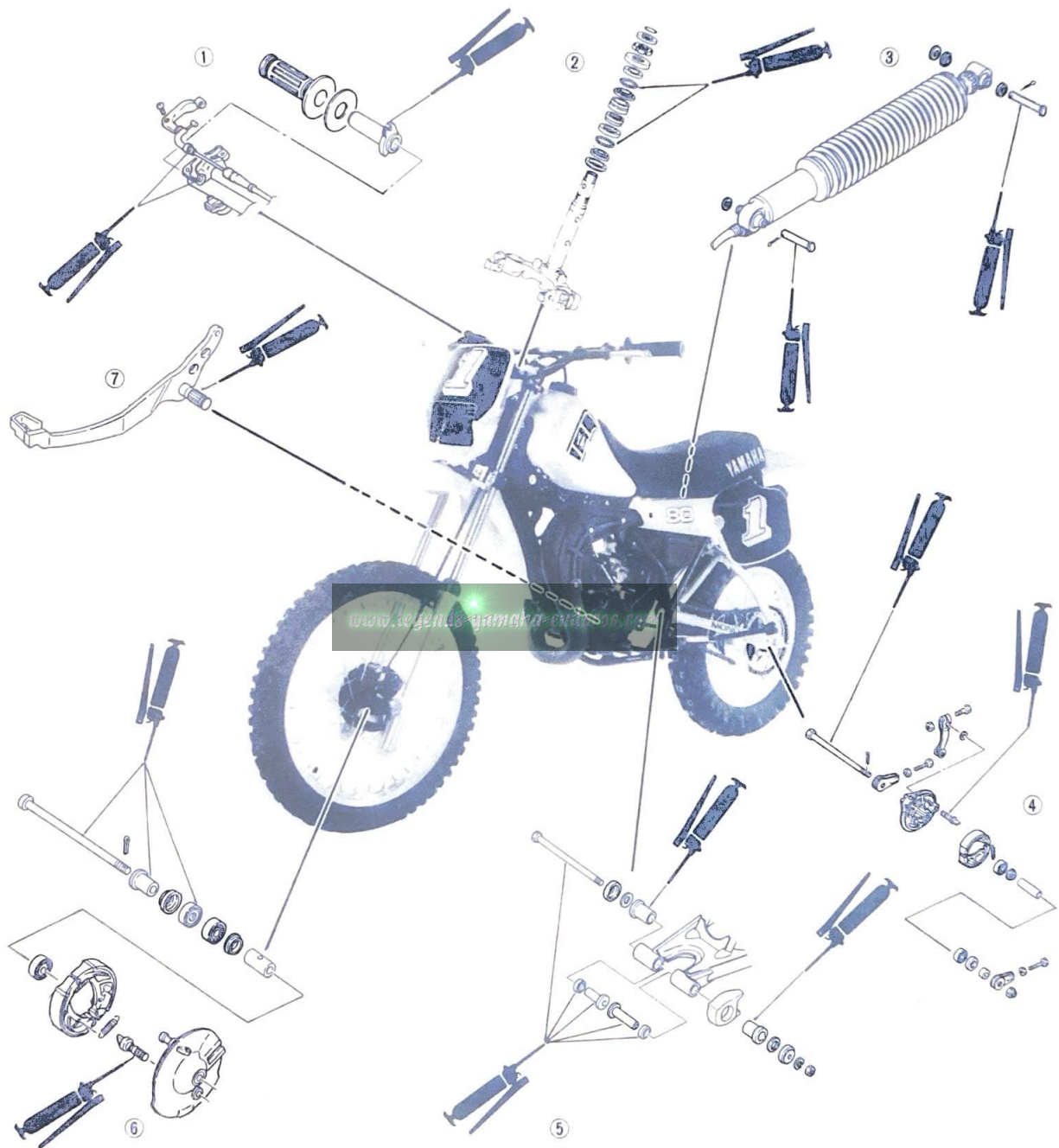
1. All control cables
2. Brake and clutch lever pivots
3. Brake rod pivot
4. Drive chain
5. Footpeg pivots
6. Push lever pivot
7. Kick starter lever pivot
8. Brake arm pivot
9. Throttle-to-handlebar contact area





B. Lubricate the following areas with lithium base grease:

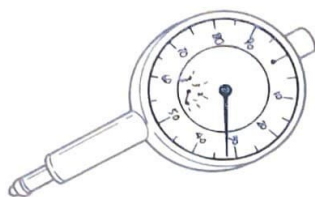
- |                               |                                |
|-------------------------------|--------------------------------|
| 1. Throttle guide tube        | 5. Rear arm pivot              |
| 2. Steering ball              | 6. Front brake camshaft, pivot |
| 3. Rear shock absorber pivot  | 7. Rear brake pedal pivot      |
| 4. Rear brake camshaft, pivot |                                |



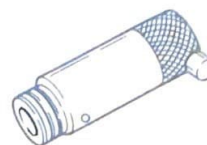
## SPECIAL TOOLS

The following special tools are required to perform maintenance, adjustments, and repairs on your machine. These tools can be obtained through your Yamaha dealer.

1 Dial gauge (90890-03097-00)



2 Dial gauge stand (90890-01195-00)

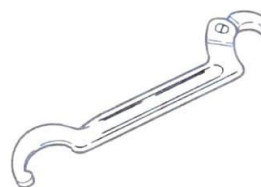


3 Dial gauge extension (90890-03098-00)



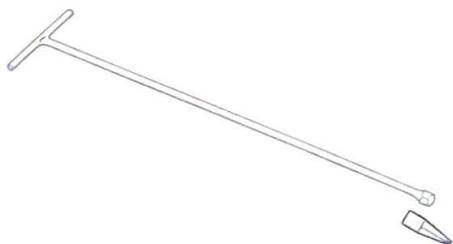
Tools 1, 2, and 3 are used to set the ignition timing.

4 Steering nut wrench (90890-01268-00)



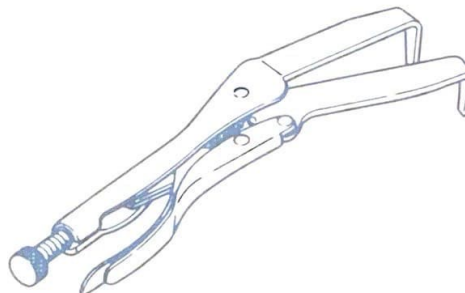
Use this wrench to put the proper tension on the steering head bearings.

5 Fork cylinder holder and adapter (90890-01326-00; 90890-01327-00)



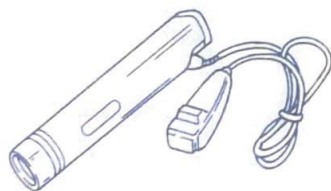
Use these tools to remove and install the fork cylinder.

6 Clutch holding tool (TLM-90910-42-00)



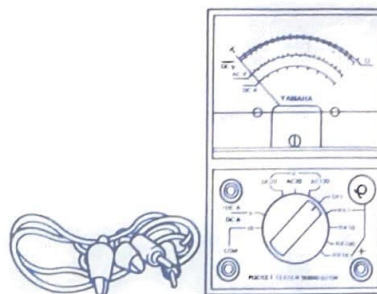
Use this tool to hold the clutch boss while removing or tightening the clutch boss nut.

**7** Timing light (90890-03109-00)



Use this tool check the ignition timing.

**8** Pocket tester (90890-03104-00)



Use this tool to measure the resistance of the coil windings.

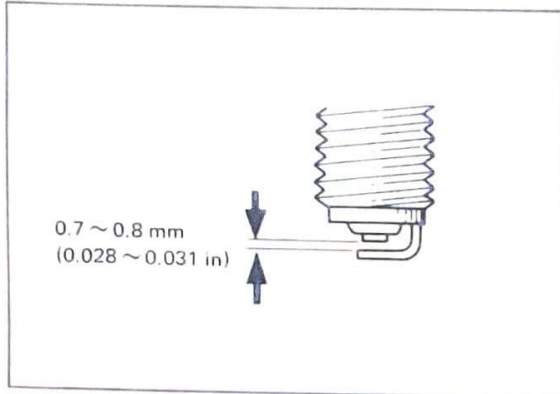


## MINOR MAINTENANCE AND ADJUSTMENTS

### Spark plug

Standard spark plug:  
N-2C (CHAMPION)

Spark plug gap:  
0.7 ~ 0.8 mm (0.028 ~ 0.031 in)



1. Whenever a new spark plug is installed, the gap must be checked and adjusted properly. Use a wire feeler gauge to check the gap, and adjust the gap by bending the side electrode gently.
2. Be sure to clean the gasket surface and threads before installing the spark plug. Torque the plug to specification.

Spark plug torque:  
25 Nm (2.5 m·kg, 18 ft·lb)

3. After running, the porcelain insulator around the center electrode should be a medium-to-light tan color. If it is too light or dark, check the carburetion, ignition timing, and oil-fuel mixture. If the light or dark color persists, a spark plug with a different heat range may be required. Bear in mind, though, that a darker-than-normal color is not unusual during break-in.

### NOTE:

If a torque wrench is not available when you are installing a spark plug, a good estimate of the correct torque is 1/2 to 1/4 turns past finger tight. Have the spark plug torqued to the correct value as soon as possible with a torque wrench.

### Ignition timing

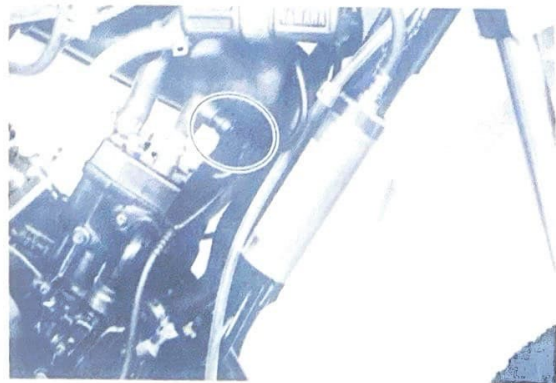
#### Checking

### WARNING:

Never start your engine or let it run for any length of time in a closed area. The exhaust fumes are poisonous and may cause loss of consciousness and death within a short time. Always operate your machine in an area with adequate ventilation.

Ignition timing is checked with a timing light by observing the position of the case mark and rotor mark.

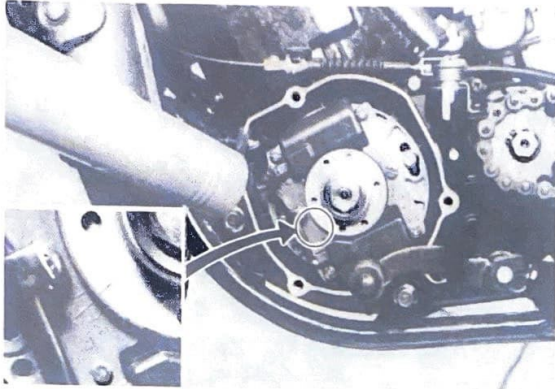
1. Remove the crankcase cover (L).  
When removing, press the shift pedal down.
2. Connect the timing light to the spark plug lead.



3. Start the engine and keep it running at the specified speed. Use a tachometer for checking.

Specified speed: 11,000 r/min

4. While keeping the engine running at a specified speed, check that the rotor mark is aligned with the case mark. If they are not aligned, adjust the ignition timing.

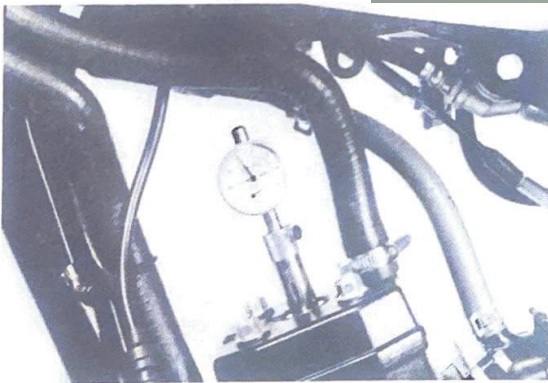


#### Adjustment

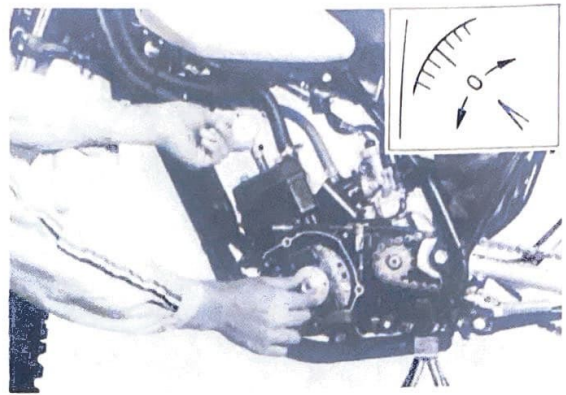
Ignition timing must be set with a dial gauge (to determine piston position).

Proceed as follows:

1. Remove the spark plug and muffler. Screw Dial Gauge Stand into spark plug hole.
2. Insert Dial Gauge Assembly with a 56 mm (2.2 in) extension (needle) into stand.



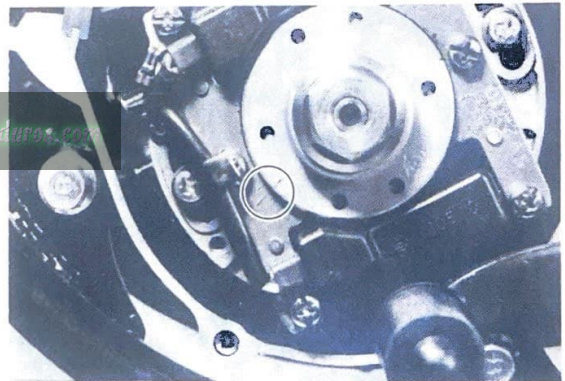
3. Remove the left engine crankcase cover.
4. Rotate rotor until piston is at top-dead center (T.D.C.). Tighten set screw on dial gauge stand to secure dial gauge assembly. Set the zero on dial gauge face to line up exactly with dial gauge needle. Rotate rotor back and forth to be sure that gauge needle does not go past zero.



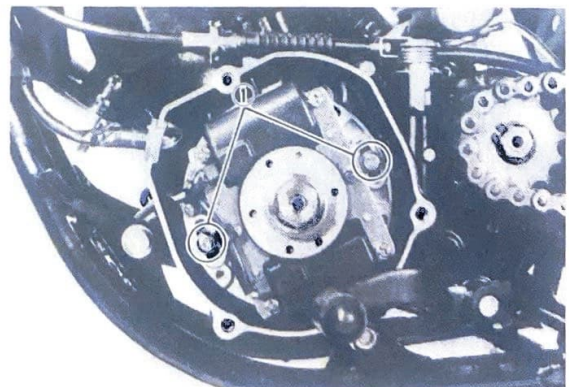
5. Starting at T.D.C., rotate rotor clockwise until dial indicator reads 0.83 mm (0.033 in) before top-dead-center (B.T.D.C.).

Ignition timing (B.T.D.C.):  
0.83 mm (0.033 in)  
(14.5°/11,000 r/min)

6. Check to see that the rotor timing mark aligns with the stator timing mark.



7. To adjust, loosen the two stator retaining screws and rotate the stator. Tighten screws and recheck the ignition timing.



1. Retaining screw



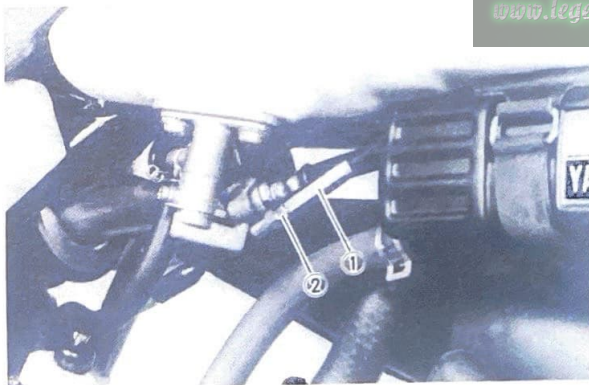
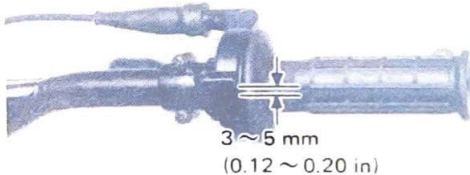
8. Remove the dial gauge assembly and stand. Install the spark plug and muffler.

Spark plug torque:  
25 Nm (2.5 m·kg, 18 ft·lb)

9. Install the engine crankcase cover.

#### Throttle cable

1. Check play in turning direction of throttle grip. The play should be 3 ~ 5 mm (0.12 ~ 0.20 in) at grip flange. Loosen the lock nut and turn the wire adjuster to make the necessary adjustment. Tighten the adjuster lock nut.

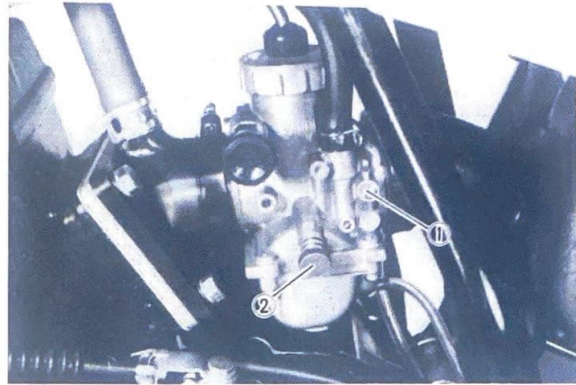


1. Adjuster 2. Lock nut

2. After adjustment, start the engine and check throttle operation. Turn the handlebars from lock to lock and note if the engine speeds up; if it does, the cable adjustment is too tight and must be re-adjusted.

#### Idle speed

1. Screw in the pilot air screw until it is lightly seated.
2. Back out by the specified number of turns. Start the engine and let it warm up.



1. Pilot air screw 2. Throttle stop screw

Pilot air screw: 1.0

3. Turn the throttle stop screw until idle is at desired r/min.
4. Turn the pilot air screw in or out until idle speed is at highest r/min.
5. Turn the throttle stop screw in or out until idle speed is at desired r/min.

Idle speed: 1,500 r/min

If the engine, when warm, hesitates after adjusting as described, turn the idle air mixture screw in or out in 1/4 turn increments until the problem is eliminated.

#### NOTE:

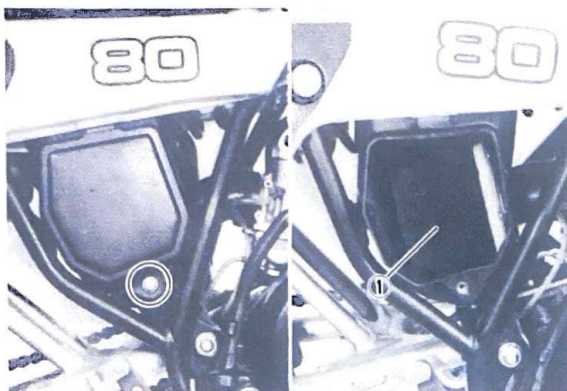
Pilot air and throttle stop screws should be adjusted so that engine response from idle position is rapid and without hesitation.



## Air filter

### Removal

1. Remove the panhead screw and cover.



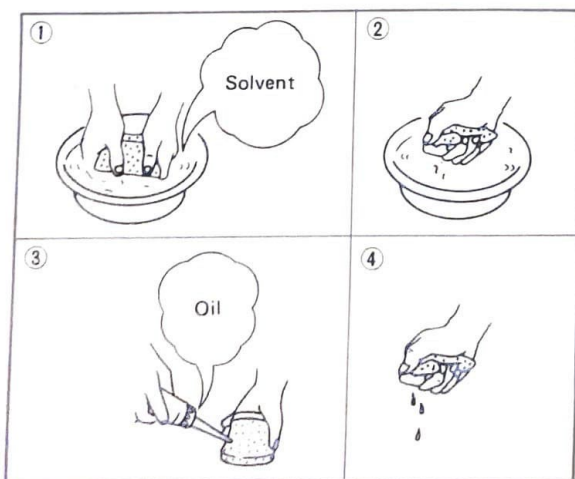
1. Element

2. Turn the element assembly counter-clockwise and remove the element. Pull out the guide from the element.



### Cleaning

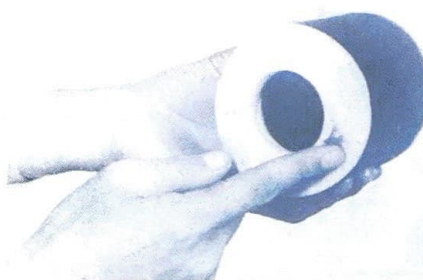
1. Wash the element gently, but thoroughly, in solvent.
2. Squeeze the excess solvent out of the element and let dry.
3. Pour a small quantity of air cooled 2-stroke engine oil onto the filter element and work thoroughly into the porous foam material.



### NOTE:

In order to function properly, the element must be damp with oil at all times, but not dripping with oil.

4. Re-insert the filter element guide into the element.
5. Coat the sealing edges of the filter element with light grease. This will provide an air-tight seal between the filter case cover and filter seat.



6. Reinstall the element assembly and parts removed for access.

### NOTE:

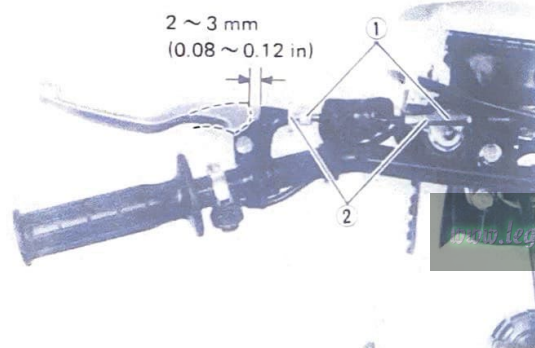
Each time filter element maintenance is performed, check the air inlet to the filter case for obstructions. Check the air cleaner joint rubber to the carburetor and manifold fittings for an air-tight seal. Tighten all fittings thoroughly to avoid the possibility of unfiltered air entering the engine.

**CAUTION:**

Never operate the engine with the air filter element removed. This will allow unfiltered air to enter, causing rapid wear and possible engine damage. Additionally, operation without the filter element will affect carburetor jetting with subsequent poor performance and possible engine overheating.

**Clutch**

The clutch should be adjusted to suit the riders preference, but free play at the lever pivot should be 2 ~ 3 mm (0.08 ~ 0.12 in). To adjust, loosen either the handle lever adjuster lock nut or the cable in-line length adjuster lock nut. Next, turn the adjuster either in or out until proper lever free play is achieved.

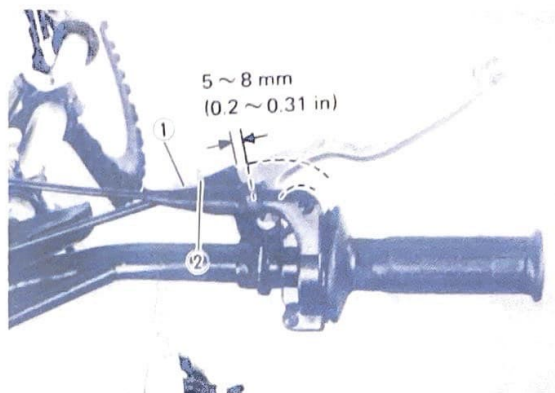


1. Adjuster 2. Lock nut

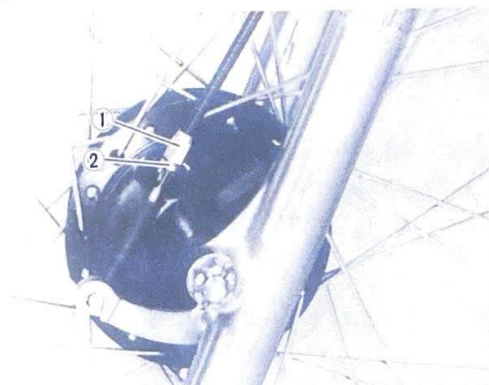
**Front brake**

The front brake should be adjusted to suit rider preference, but free play at the lever pivot should be 5 ~ 8 mm (0.2 ~ 0.31 in). Adjustment is accomplished at one of two places; either the handle lever holder or the front brake hub.

1. Loosen the adjuster lock nut.
2. Turn the cable length adjuster in or out until adjustments is suitable.
3. Tighten the adjuster lock nut.



1. Adjuster 2. Lock nut



1. Adjuster 2. Lock nut

**Rear brake****WARNING:**

For the brake pedal position adjustment, be sure to proceed as follows; (It is advisable to have your Yamaha dealer.)

1. Pedal height
  - a. Loosen the adjuster lock nut (for pedal height).
  - b. By turning the adjuster clockwise or counterclockwise, adjust the brake pedal position so that its top end is flush with the top of the footrest.
  - c. Secure the adjuster lock nut.

**WARNING:**

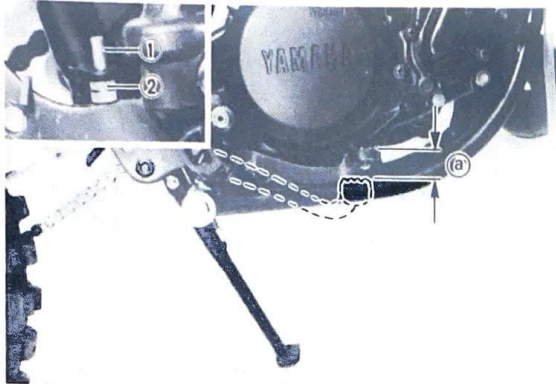
After adjusting the pedal height, the brake pedal free play should be adjusted.



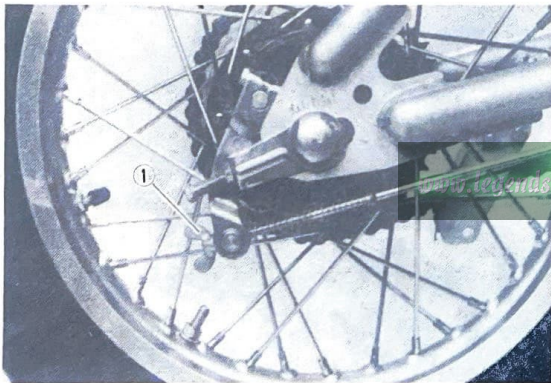
## 2. Free play

The rear brake should be adjusted to suit rider preference, but free play at the end of the brake pedal should be 20 ~ 30 mm (0.8 ~ 1.2 in).

To adjust, turn the adjuster on the brake rod clockwise to reduce play; turn the adjuster counterclockwise to increase play.



1. Adjuster bolt (For pedal height)      2. Lock nut  
a. 20 ~ 30 mm (0.8 ~ 1.2 in)



1. Adjuster

### WARNING:

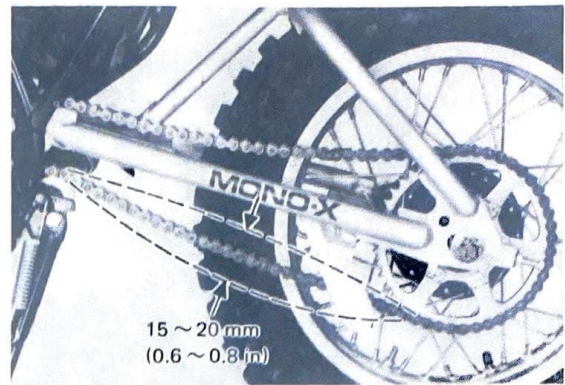
The rear brake pedal adjustment must be checked anytime chain is adjusted or rear wheel is removed and then reinstalled.

### Drive chain

To check the chain play, the machine must stand vertically with both wheels on the ground and without rider on it.

Measure the play at the bottom of the chain at a point midway between the drive and driven sprockets.

The normal vertical deflection is approximately 15 ~ 20 mm (0.6 ~ 0.8 in). If the chain deflection is not as specified, adjust the chain tension.

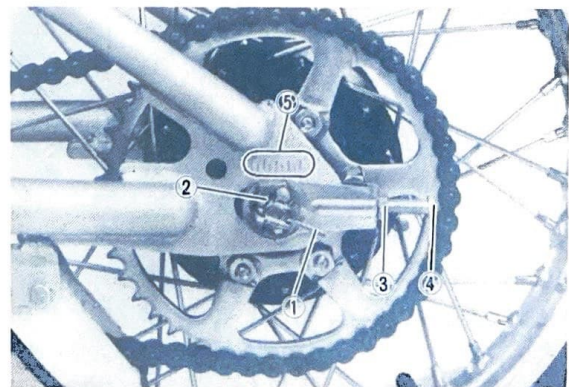


### Drive chain tension adjustment

#### NOTE:

Before checking and/or adjusting, rotate the rear wheel through several revolutions and check the tension several times to find the tightest point. Check and/or adjust chain tension with rear wheel in this "tight chain" position.

1. Loosen the rear brake rod adjuster.
2. Remove the cotter pin from the rear wheel axle nut with pliers.
3. Loosen the rear wheel axle nut.
4. Loosen the lock nuts. To tighten chain, turn chain puller adjusting bolts clockwise. To loosen chain, turn adjusting bolts counterclockwise and push wheel forward. Turn each bolt exactly the same amount to maintain correct axle alignment. (There are marks on each side of rear arm and on each chain puller; use them to check for proper alignment.)



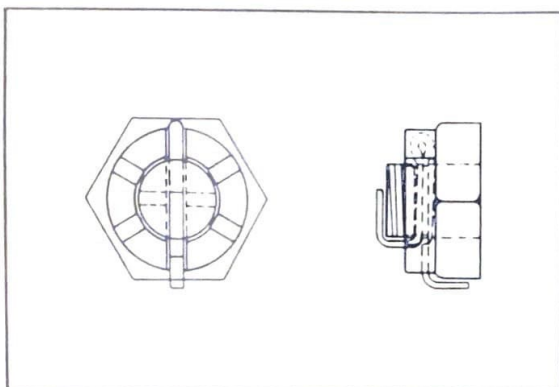
1. Cotter pin      4. Adjusting bolt  
2. Rear wheel axle nut      5. Marks for alignment  
3. Lock nut



5. After adjusting, be sure to tighten the lock nuts and rear wheel axle nut. If the nut notch and the cotter pin hole do not match, tighten the nut slightly to match.

Tightening torque:  
85 Nm (8.5 m·kg, 61 ft·lb)

6. Also tighten the adjusting bolts against the rear arm (about 1/4 turn each).
7. Insert the cotter pin into the rear wheel axle nut and bend the cotter pin end as shown in the illustration.



#### **WARNING:**

Always use a new cotter pin on the axle nut.

8. In the final step, adjust the play in the brake pedal.

#### **NOTE:**

Excessive chain tension will overload the engine and other vital parts; keep the tension within the specified limits.

#### **Steering head**

Periodically inspect the condition of the steering. Worn out or loose steering bearings may be dangerous.

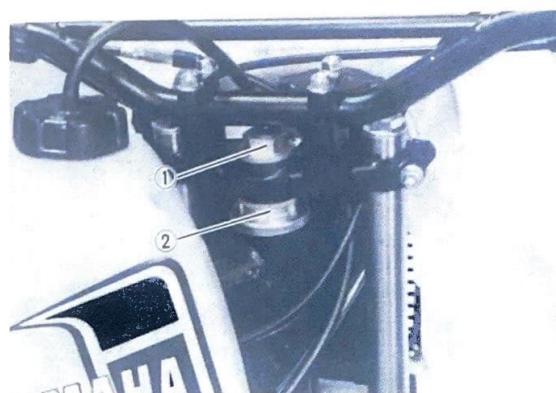
Place a block under the engine to hold the front wheel of the machine off the ground. Then hold the lower end of the front fork and try to move forward and backward.

Check to see that the handlebars turn to the right and left smoothly.



#### **Steering adjustment**

1. To adjust, loosen stem bolt.



1. Stem bolt      2. Ring nut

2. Use ring nut wrench to tighten ring nut.



1. Ring nut wrench

#### **CAUTION:**

Forks must be swing from lock to lock without binding or catching.

3. Tighten stem bolt.

Tightening torque:  
125 Nm (12.5 m·kg, 90 ft·lb)

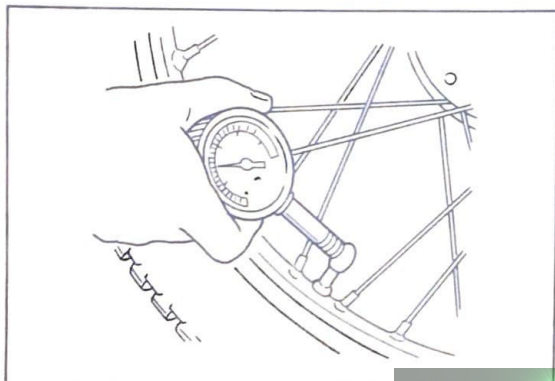
**NOTE:**  
Steering head disassembly must be performed by your Yamaha dealer.

### Tire air pressure

Tire pressure affects traction, handling, and the life of the tire. Adjust the tire pressure to suit track conditions and rider preference, but do not stay too far from the recommended pressure.

Recommended pressure:

Front	98.1 kPa (1.0 kg/cm <sup>2</sup> , 14 psi)
Rear	98.1 kPa (1.0 kg/cm <sup>2</sup> , 14 psi)



[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)

### Tuning guidance

Adjust the tire pressures to suit track conditions.

1. When a trail is wet in the rain, muddy, sandy or slippery, reduce the tire pressures to increase the tire tread.

78.5 ~ 98.1 kPa  
(0.8 ~ 1.0 kg/cm<sup>2</sup>, 12 ~ 14 psi)

2. When a trail is pebbly or hard, increase the tire pressures to prevent punctures, though tires will become easy to skid.

98.1 ~ 118 kPa  
(1.0 ~ 1.2 kg/cm<sup>2</sup>, 14 ~ 18 psi)

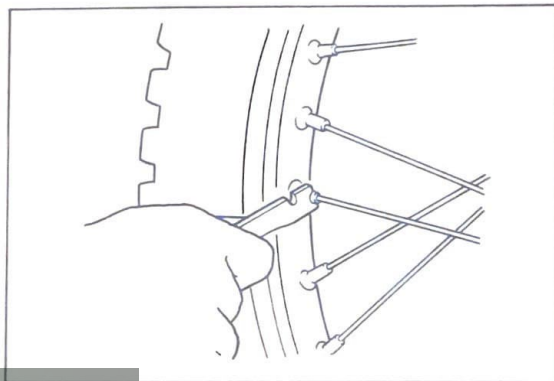
### CAUTION:

When the tire pressure is low, a loose rim lock may allow the tire to slip on the rim. Check for loose rim locks.

Make sure the valve stem is square in the rim hole. If not square, adjust its position properly.

### Spokes

The spokes should be checked after every race. If they are bent, replace them. If they are loose, tighten them. Avoid overtightening the spokes, as the hub may be distorted and braking power diminished.



### **3 SUSPENSION TUNING**

<b>FRONT FORKS</b> .....	3-1
Fork oil replacement .....	3-1
Air pressure adjustment .....	3-2
Suspension setting .....	3-3
<b>REAR SHOCK ABSORBER</b> .....	3-3
Break-in .....	3-3
Damping adjustment .....	3-4
Spring preload adjustment .....	3-5
Spring replacement .....	3-5
Gas pressure adjustment .....	3-6
<b>COMPATIBILITY CHART</b> .....	3-6

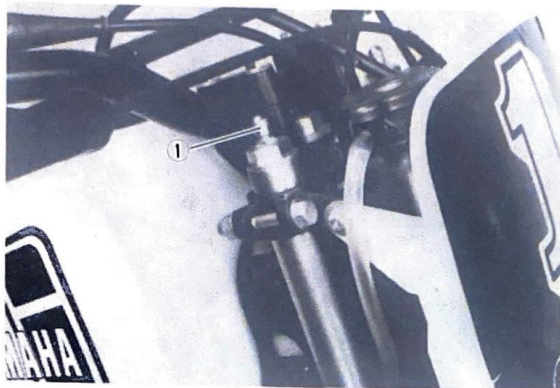


## 3 SUSPENSION TUNING

### FRONT FORKS

#### Fork oil replacement

1. Place a suitable stand under the engine to keep the front of machine raised off the floor.
2. Remove the valve cap.

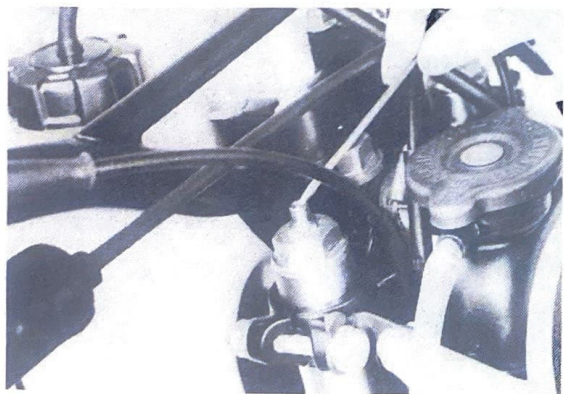


1. Valve cap

3. Using a slotted-head screwdriver, press the valve and keep it open for more than 3 seconds so that the air can be let out from the inner tube.

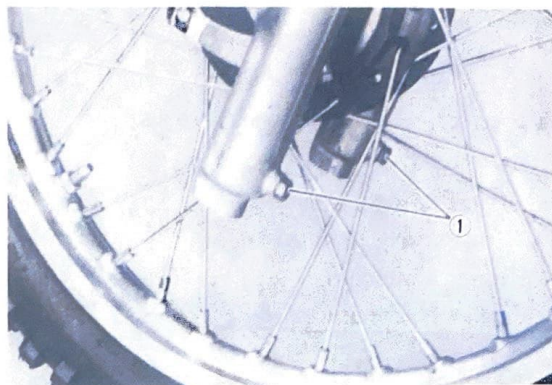
#### NOTE:

When the air has to be extracted from the tube extract little by little. If not, oil stout out together with the air, causing harm to you.



4. Remove the cap bolt assembly.  
And remove the spring seat and fork spring.

5. Place an open container beneath each drain hole and remove the drain bolts.



1. Drain bolts

6. After most of oil has drained, slowly raise and lower outer tubes to pump out remaining oil.
7. Install drain bolts.

#### NOTE:

Check gasket, replace if damaged.

8. Measure correct amount of oil and pour into each leg.

#### Recommended oil:

Yamaha fork oil 20 wt or

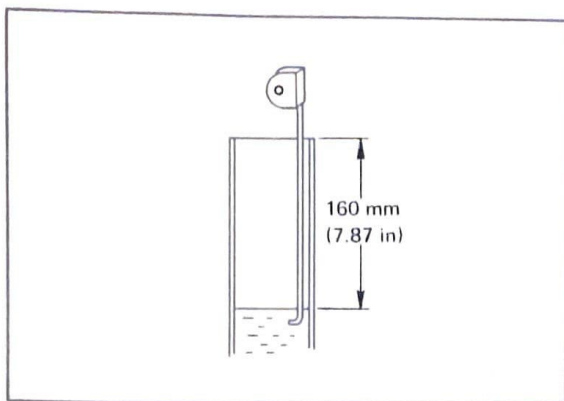
SAE #20 motor oil

Oil quantity: 188 cm<sup>3</sup>

(6.6 Imp oz, 6.4 US oz)

- \* From #20 to #25 →  
damping is increased, and the fork moves slowly.
- \* From #20 to #15 →  
damping is decreased, and the fork moves quickly.

9. Measure the oil level from top of the fork tube with a tape measure. The fork tubes must be fully bottomed and remove the fork spring.



10. After filling, slowly pump the outer tubes up and down to distribute the oil.
11. Inspect the O-ring on cap bolt and replace if damaged.



12. Install spring seat, fork spring and cap bolt and torque to specification.

Tightening torque:  
55 Nm (5.5 m·kg, 40 ft·lb)

#### Air pressure adjustment

- \* Increase air pressure →  
cause initial load to increase, and absorber becomes hard.
- \* Decrease air pressure →  
cause initial load to decrease, and absorber becomes soft.

#### CAUTION:

For proper damping effects, the sealed air pressure must be maintained at the following levels.

Both forks must have the same pressure.

1. Place a suitable stand under the engine to keep the front of machine raised off the floor. No weight on front wheel.
2. Using a manual air pump, fill with air.

#### CAUTION:

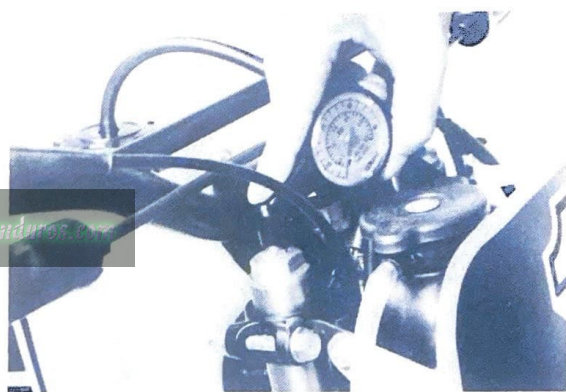
The gas pressure should not exceed 245 kPa (2.5 kg/cm<sup>2</sup>, 35.6 psi). Excess gas pressure will cause damage to the forks.

3. Using the air check gauge, adjust the air-pressure to specification.

Standard air pressure:  
0 kPa (0 kg/cm<sup>2</sup>, 0 psi)

#### NOTE:

Each time the air gauge is inserted, the air pressure decreases about 4.9 kPa (0.05 kg/cm<sup>2</sup>, 0.7 psi) to 9.81 kPa (0.1 kg/cm<sup>2</sup>, 1.4 psi).



#### NOTE:

An optional air check gauge is available. Please ask your nearby Yamaha dealer. P/No. 2X4-2811A-00.

#### NOTE:

When oil enters the gauge, thereby keeping the needle from returning to the original position, loosen the screw in the rubber at the gauge mouth, and shake the gauge several times to remove the oil inside. After making sure of the needle being at the original position, retighten the screw.


4. The difference between both right and left tubes should be 9.8 kPa (0.1 kg/cm<sup>2</sup>, 1.4 psi) or less.



### Suspension setting

The front forks are designed, assuming that the rider's weight including his riding equipment is 50 kgs (110 lbs). If the rider's weight differs from this standard, the spring preload should be adjusted properly. The preload can also be adjusted to suit rider's preference or according to the race course conditions.

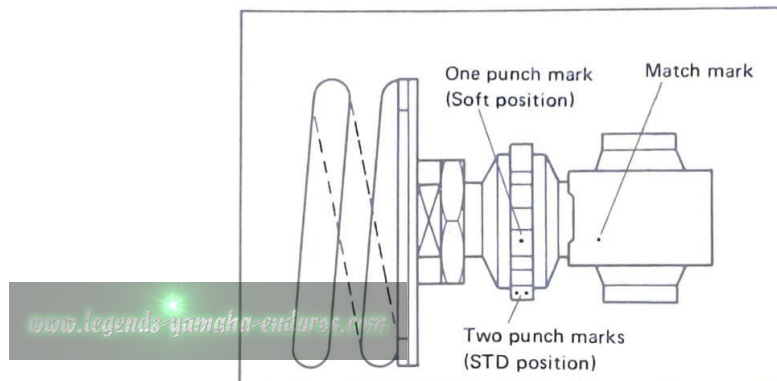
1. In addition to the standard type, heavy duty type fork spring is available.

Type	Part No.	Spring rate (kg/mm)	I.D. mark
Standard	4V1-23351-10	$K1 = 0.225$	—
Heavy duty	5X2-13351-10	$K1 = 0.25$	

## REAR SHOCK (MONOCROSS SUSPENSION "DE CARBON" SYSTEM)

### Break-in:

For the first 300 km (200 mi) of operation, this suspension unit should be broken in. To afford better riding comfort, the monocross unit is set on a two steps softer side (one punch mark). After the break-in period, return the monocross unit to the standard position (two punch marks). If the standard position does not suit your preference or road condition, make a re-adjustment or other necessary adjustments. \*The monocross unit is originally set so as to suit the standard rider.



This machine's suspension is adjustable to best suit the rider's preference or road conditions.

### Damping adjustment

This adjustment can be done in about 16 steps without removing the rear shock absorber.

1. To make the damping stiffer, turn the damping adjuster clockwise.
2. To make the damping softer, turn the adjuster counterclockwise.

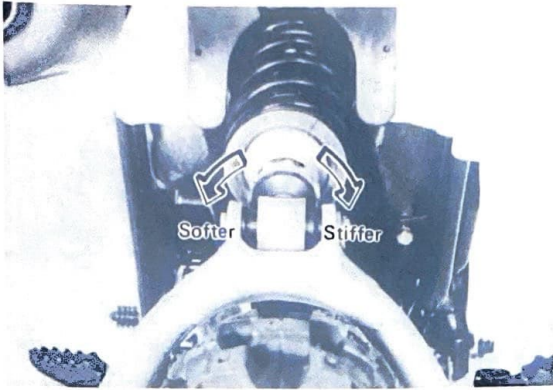
### CAUTION:

Adjust the damping in increments of 1 ~ 2 clicks. And test the performance by riding after adjustment.



3. To set the damping, turn the damping adjuster clockwise until it bottoms; then back it out to the standard setting.

Standard damping setting: 4 clicks out



**NOTE:** \_\_\_\_\_

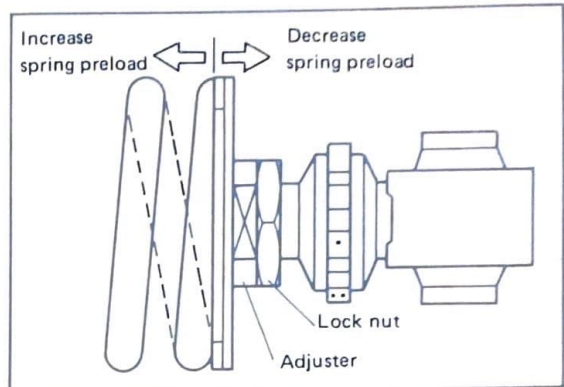
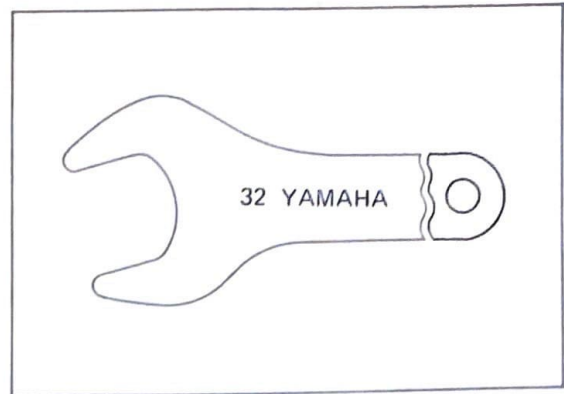
Turn the adjuster until it clicks.

Stop turning the adjuster when it suddenly becomes heavy or light. Do not give any further turns.

#### Spring preload adjustment

The preload is adjusted by changing the set length of the spring: a shorter set length increases the preload, a longer set length decreases the preload.

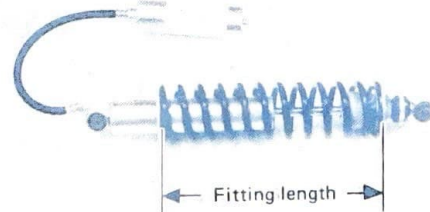
1. To adjust the preload, remove the shock absorber and loosen the lock nut.
2. Adjust the spring set length by turning the spring adjuster with the special wrench. To increase the preload, turn the spring adjuster clockwise. To decrease the preload, turn the spring adjuster counterclockwise. Never attempt to turn the adjuster beyond the maximum or minimum setting.



Standard length (installed):  
276 mm (10.9 in)

Minimum length (installed)  
258 mm (10.2 in)

Maximum length (installed)  
278 mm (10.9 in)



**NOTE:** \_\_\_\_\_

Whenever adjusting the preload, adjust the spring set length in 3 mm (0.1 in) increments. Always tighten the lock nut against the spring adjuster and torque the lock nut to specification.

Tightening torque:  
55 Nm (5.5 m·kg, 40 ft·lb)

- \* Shortening the set length: increases the preload; the shock becomes stiffer and rebounds more quickly.
- \* Lengthening the set length: decreases the preload; the shock becomes softer and rebounds more slowly.

**Spring replacement**

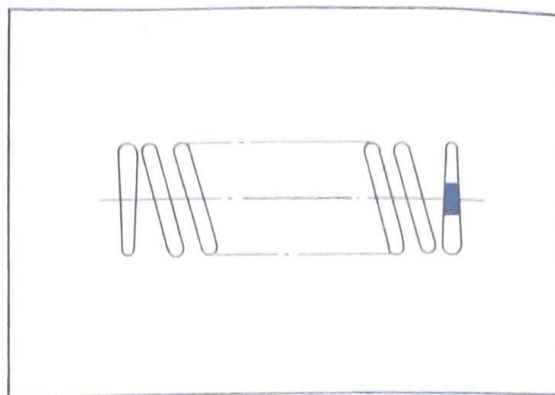
In addition to the standard type, heavy duty type of spring are available. If the standard type is improper for your purpose, select a proper one according to the rider's weight or road conditions.

1. Using the heavy duty type: the spring rate is higher; the spring is stiffer and rebounds more quickly.

[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)

Type	Part No.	I.D. Color
Standard	5X2-22212-00	—
Heavy duty	5X2-22212-10	Blue

Identification color is shown on right end of a spring.



**Gas pressure adjustment**

The nitrogen gas pressure is adjustable. For this adjustment, take the unit to your Authorized Yamaha dealer.

## COMPATIBILITY CHART

### WARNING:

**READ AND UNDERSTAND ALL INSTRUCTIONS DEALING WITH SUSPENSION COMPONENTS. FAILURE TO FOLLOW INSTRUCTIONS AND GUIDELINES MAY RESULT IN DAMAGE TO MACHINE AND/OR INJURY TO A MECHANIC OR USER.**

### FRONT FORKS

Problem	Step 1	Step 2	Step 3
Bottoming	Increase air pressure	Use harder spring	—
Too soft	Increase air pressure	Increase oil viscosity (20 wt to 25 wt)	Use harder spring
Too hard	Decrease oil viscosity (20 wt to 15 wt)	(Decrease air pressure)	—
<b>GUIDELINES AND LIMITS</b>			
(1) OIL:	STANDARD: 20 wt fork oil	ALTERNATE: 15 wt, 25 wt	
(2) AIR PRESSURE:	MINIMUM:	0 kPa (0 kg/cm <sup>2</sup> , 0 psi)	
	MAXIMUM:	117.1 kPa (1.2 kg/cm <sup>2</sup> , 17.1 psi)	
	INCREASE:	step of 9.8 kPa (0.1 kg/cm <sup>2</sup> , 1.4 psi)	

### REAR SHOCK ABSORBER

Problem	Step 1	Step 2	Step 3
Bottoming	Shorten the spring set length	Increase damping force	Use harder spring (5X2-22212-10)
Too soft	Increase damping force	Shorten the spring set length	Use harder spring (5X2-22212-10)
Too hard	Decrease damping force	Extent the spring set length	—
GUIDELINES AND LIMITS			
1. SET LENGTH	MINIMUM:	258 mm (10.2 in)	
	MAXIMUM:	278 mm (10.9 in)	
	INCREASE:	steps of 3 mm (0.1 in)	
2. DAMPING FORCE	Adjust by 1 or 2 clicks. Do not jump over many clips at a time; it may give the rider a misleading suspension feeling.		

#### Tuning Notes:

1. It is advisable to use the standard setting. If it does not suit your preference, then make an adjustment according to the table above and the following instructions.
2. Start adjustments using sequence 1. After each test ride, proceed to the next sequence, if necessary.
  - Set length should be adjusted in 3 mm (0.1 in) increments.
  - Damping should be adjusted in increments of 1 ~ 2 clicks.



## 4 ENGINE MAINTENANCE AND REPAIR

PREPARATION FOR SERVICE .....	4-1
DISASSEMBLY, INSPECTION AND ASSEMBLY .....	4-2
CARBURETOR .....	4-3
Inspection .....	4-4
Tuning guidance .....	4-6
YAMAHA ENERGY INDUCTION SYSTEM .....	4-6
Inspection .....	4-7
REED VALVE .....	4-7
MUFFLER .....	4-7
Removal .....	4-7
Maintenance .....	4-8
CYLINDER HEAD .....	4-8
Preparation for removal .....	4-8
Cylinder head removal .....	4-8
Maintenance .....	4-10
CYLINDER .....	4-10
Removal .....	4-10
Maintenance .....	4-11
PISTON ASSEMBLY .....	4-11
Removal .....	4-11
Maintenance .....	4-14
CLUTCH .....	4-14
Removal .....	4-15
Maintenance .....	4-16
KICK STARTER .....	4-16
Removal .....	4-16
Inspection .....	4-16
Reassembly .....	4-16
SHIFTER .....	4-16
Removal .....	4-16
Inspection .....	4-16
Installation .....	4-16
COOLING SYSTEM .....	4-19
COOLANT .....	4-19
Coolant draining .....	4-19
Replenishing coolant .....	4-19
WATER PUMP .....	4-20
Disassembly .....	4-20
Cleaning and inspection .....	4-20
Reassembly .....	4-21

## **4 ENGINE MAINTENANCE AND REPAIR**

### **PREPARATION FOR SERVICE**

Prior to beginning any work on the engine, take note of the following bits of advice; they will greatly facilitate your engine maintenance and repair:

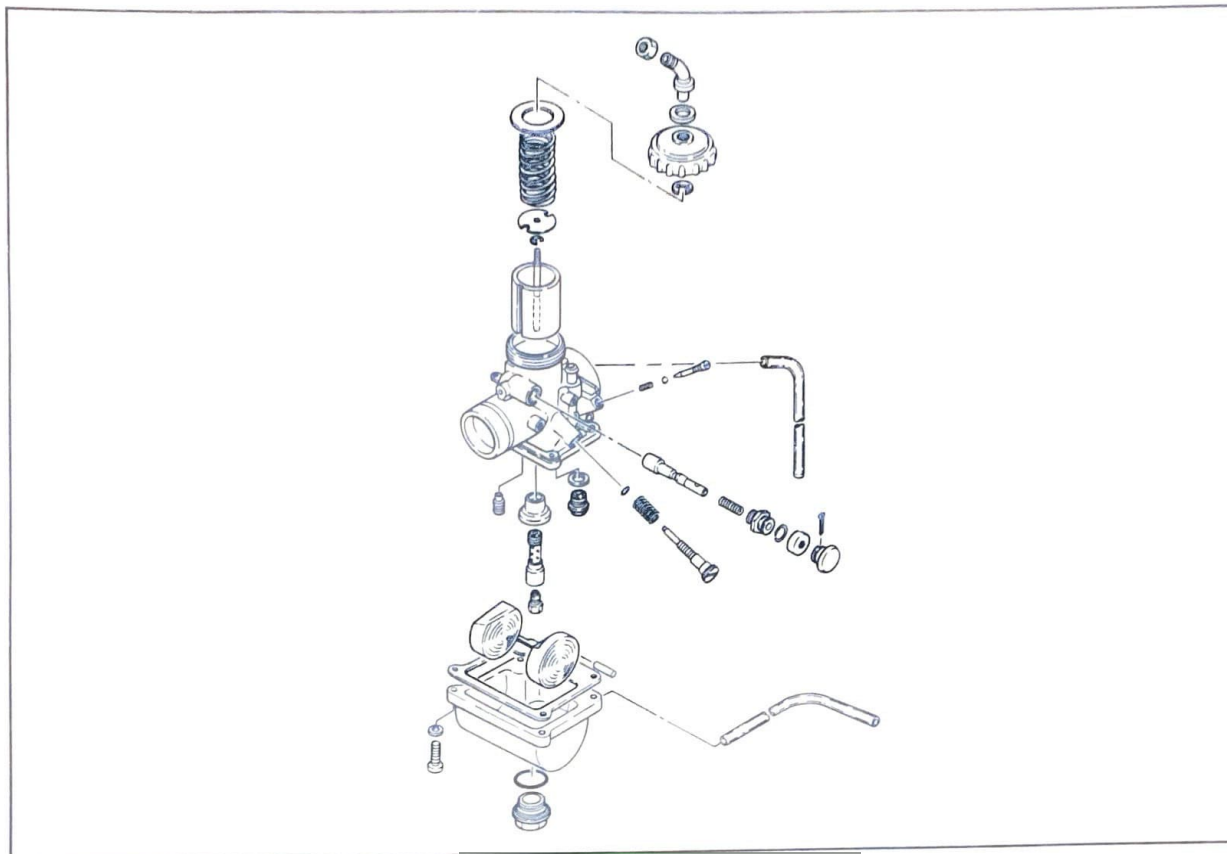
- Clean your machine as described in the General Information section entitled, "Cleaning and Storage";
- Group the parts of each component on individual trays, and arrange the parts in the order of their removal;
- When replacing parts, always use the genuine Yamaha article to maintain optimum performance, durability, and safety;
- All gaskets and seals should be replaced during engine work, and all gasket surfaces should be clean;
- During assembly, always apply oil or grease to bearing surfaces to protect them upon initial start-up;
- Replace all circlips which are distorted from use or disassembly;
- Always replace cotter pins and piston pin clips after one use;
- Always clean and oil the threads of nuts, bolts, and screws during assembly, and torque them to the proper specifications whenever possible.

[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)

4

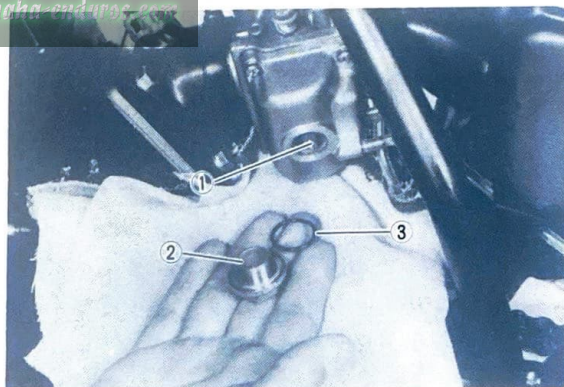
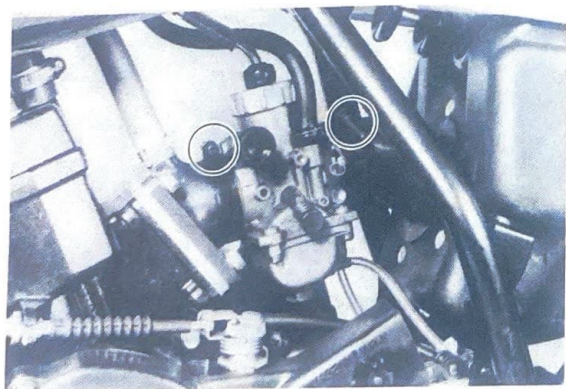
# DISASSEMBLY, INSPECTION AND ASSEMBLY

## CARBURETOR



### NOTE:

It is not necessary to remove the carburetor to replace the main jet: Loose the hose clamps on the manifold and air cleaner joint, rotate the carb, and remove the main jet cover bolt from the float bowl. The main jet can thereby be removed and replaced.



1. Main jet    2. Cover bolt    3. O-ring

Standard main jet size: #210



**WARNING:**

When the main jet cover bolt is removed, the fuel in the float bowl will drain. Do not remove the bolt when the engine is hot. Place a rag under the carb when removing the bolt to catch the fuel. Remove the bolt in a well-ventilated area, away from any open flame. Always clean and dry the machine after completing main jet changes.

**IMPORTANT:**

The carburetor has been set for operation at or near sea level; in most instances, it will not require changes. Some conditions, however, do demand carb setting changes to maintain performance. If this is the case, make the changes in small increments and check the results with a spark plug check. Improper settings can lead to poor performance or possible engine damage. If you are in doubt as to what setting changes to make, consult your Yamaha dealer.

**Inspection**

1. Examine carburetor body and fuel passages. If contaminated, wash carburetor in petroleum based solvent. Do not use caustic carburetor cleaning solutions. Blow out all passages and jets with compressed air.
2. Examine condition of floats. If floats are leaking or damaged, they should be replaced.
3. Inspect inlet needle valve and seat for wear or contamination. Replace these components as a set.

4. Hold the carburetor in an upside down position.

Incline the carburetor at  $60^{\circ} \sim 70^{\circ}$  (so that the end of the float valve does not hang down of float weight), and measure the distance from the mating surface of the float chamber (gasket removed) and carburetor to the top of the float arm using a gauge.

Float height:

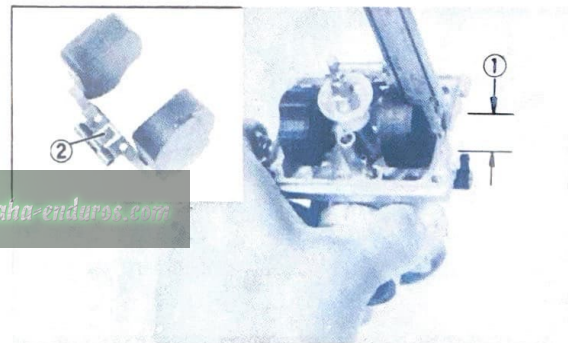
$21.0 \pm 1 \text{ mm } (0.83 \pm 0.039 \text{ in})$

Level with carburetor base

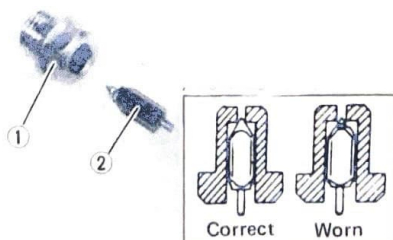
**CAUTION:**

Check the float valve and valve seat for wear before adjustment.

5. Make the adjustment by bending the tang on the float arm.



1. Float height 2. Tang



1. Valve seat

2. Float valve

## Tuning guide

When the carburetor is not set properly for the engine, poor engine performance will result from the following two causes; too rich or too lean mixture.

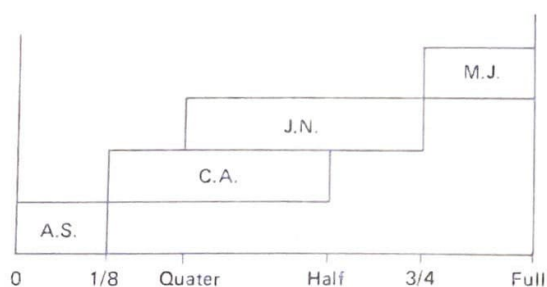
Mixture is too rich.	Mixture is too lean.
<ul style="list-style-type: none"> <li>* Exhaust makes dull sound in an on-and-off way.</li> <li>* When starter is applied, engine runs more roughly.</li> <li>* When engine is warmed up, it runs roughly.</li> <li>* Spark plug is dark.</li> <li>* When cleaner case cover is removed, engine runs smoothly.</li> <li>* Exhaust is smoky.</li> </ul>	<ul style="list-style-type: none"> <li>* Engine overheats.</li> <li>* When starter is applied, engine runs smoothly.</li> <li>* Poor acceleration will result.</li> <li>* Spark plug is too light.</li> <li>* Engine runs roughly and lacks power.</li> </ul>

This carburetor is so designed that the parts to be adjusted differ depending on the throttle opening. Therefore, it is necessary to first check whether mixture is too rich or too lean, and then to find out what is the throttle opening.

### • Machine speed

* Low speed	Air screw, cutaway
* Medium speed	Jet needle-clip position
* High speed	Main jet

### • Throttle opening

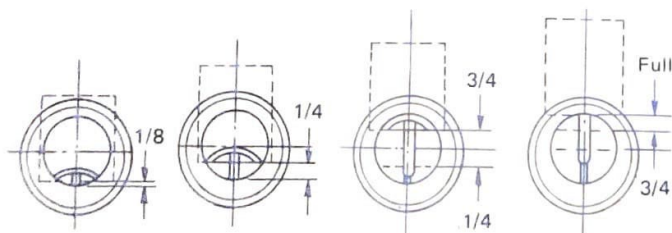


It is a wise practice to adjust the air screw, jet needle-clip position or main jet to eliminate the causes of trouble.

If the air-fuel mixture is too lean, the engine tends to overheat and seize up, and on the contrary, if too rich, the spark plug easily gets wet, thus causing misfires. The proper strength of the mixture varies depending on atmospheric conditions (pressure, humidity, and temperature). Taking these condition into consideration, adjust the carburetor settings properly.

## TEST RUNS

Warm up the engine with the carburetor of the standard settings, and run two or three laps of the course while examining the operating condition of the spark plug.



Condition of spark plug	
Correct	Insulator is dry and light tan color.
Too hot	Insulator is whitish.
Too cold	Insulator is wet and sooty.

If spark plug is whitish, the fuel-air mixture is lean.

- \* Replace the main jet with a one step large type.

If spark plug is wet, the fuel-air mixture is rich.

- \* Replace the main jet with a one step smaller type.

#### MAIN JET (M.J.)

Standard setting: #210

The larger the size No., the richer the mixture, and smaller the No., the leaner the mixture.

#### CAUTION:

- \* It is advisable to carry extra main jets which are up to 3 steps (1 step = 10) above and below the standard size.
- \* The main jet determines the mixture in the range of throttle opening from 3/4 to full-open.

To RICH ↑	# 220 (137-14143-44)
STD	# 210 (137-14143-42)
↓ To LEAN	# 200 (137-14143-40)



#### JET NEEDLE ADJUSTMENT

Jet needle should be changed only when the machine shows poor medium speed performance. If the mixture is too rich or too lean, acceleration will be slow.

- When rich at medium speeds:

The engine runs roughly with slow throttle response.

Raise the jet needle clip position one step to make the mixture lean.

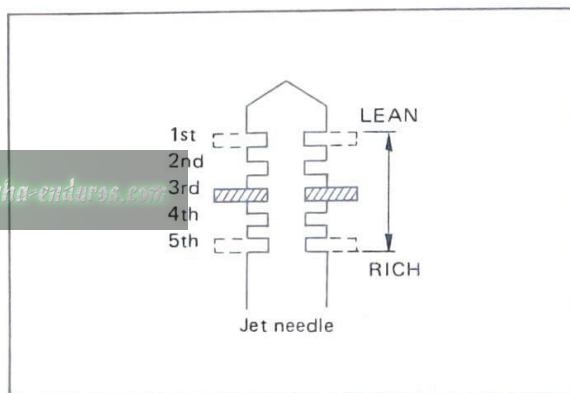
- When lean at medium speed:

The engine runs roughly.

Lower the clip position one step to enrich the mixture.

The jet needle is provided with five grooves. When the clip position is moved up one or two steps, the mixture becomes leaner. When the clip position is moved down one or two steps, the mixture becomes richer.

Standard setting: 4J13-3

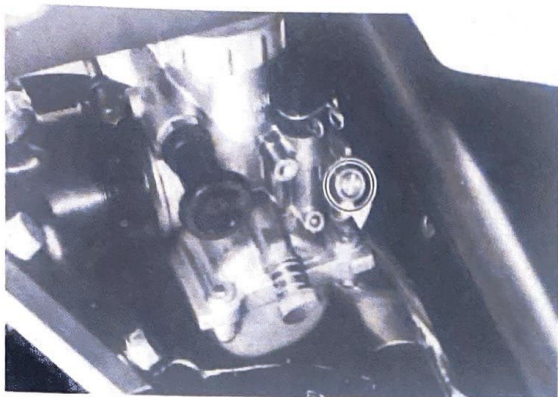


#### AIR SCREW (A.S.)

Standard setting: 1.0

Turning in the air screw decreases the air flow and makes the mixture richer, and turning out makes the mixture leaner with an increase in the air flow.





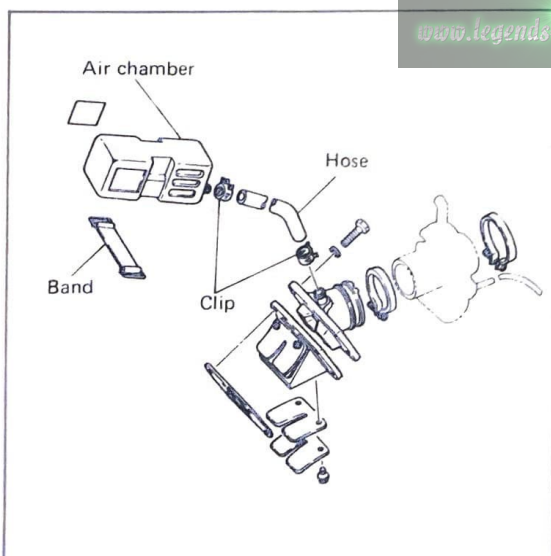
## YAMAHA ENERGY INDUCTION SYSTEM (Y.E.I.S.)

### CAUTION:

Never attempt to modify the Yamaha Energy Induction System.

The air chamber and hose should be handled with special care.

Any imperfect connection or installation of these parts or damaged parts will have an adverse effect on the performance of the system. Check parts, and be sure to replace any defective one.

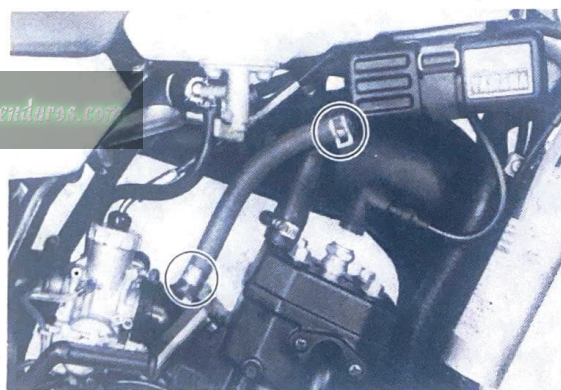


### Inspection

1. Check the hose and air chamber for cracks or any other damage. If there is any cracks or damage, replace them.

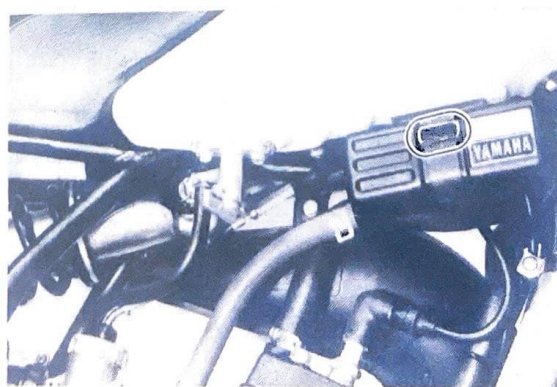


2. Check the tightness of hose clip, and re-tighten as required.

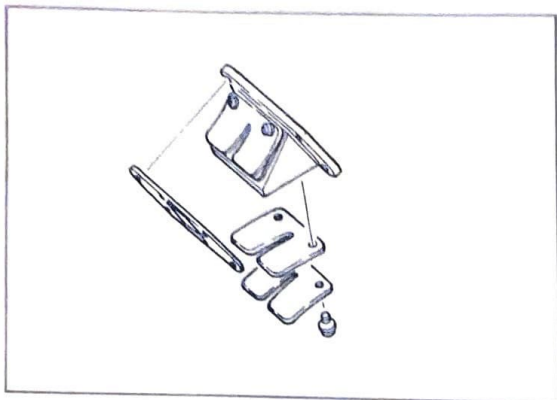


### NOTE:

The fuel tank is provided with the Y.E.I.S. air chamber. When removing or mounting the fuel tank, first remove the band holding the air chamber.



## REED VALVE

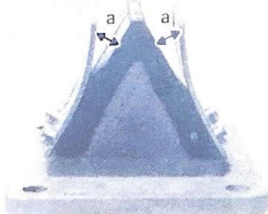


### Inspection

1. Inspect rubber intake manifold for signs of weathering, checking or other deterioration.
2. Inspect reed petals for signs of fatigue and cracks. Reed petals should fit flush or nearly flush against neoprene seats. If in doubt as to sealing ability, apply suction to carburetor side of assembly. Leakage should be slight to moderate.
3. The valve stopper controls the movement of the valve. Check clearance "a".

Standard valve "a": 8.3 mm (0.33 in)

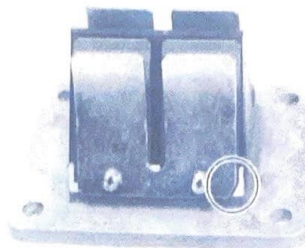
If it is 0.5 mm (0.02 in) more or less than specified, replace the valve stopper.



4. Check reed valve for bending. If beyond tolerance, replace reed valve.

Reed valve bending limit:  
0.3 mm (0.012 in) or less

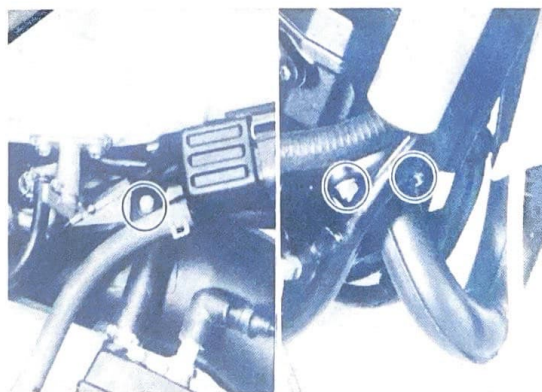
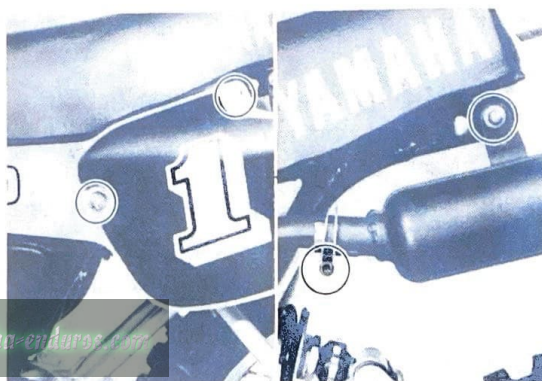
5. During reassembly, note the cut in the lower corner of the reed and stopper plate. Use as aid to direction of reed installation.



## MUFFLER

### Removal

1. Remove the side cover (L.H.)
2. Remove the nuts holding muffler to cylinder and remove the muffler mounting bolts, and screw.



### Maintenance

1. Using a rounded scraper, remove excess carbon deposits from manifold area of exhaust pipe. Check muffler gasket condition. The gasket seat is located around the cylinder exhaust port.





2. Carbon deposits within the silencer may be removed by lightly tapping the outer shell with a hammer and then blowing out with compressed air. Heavy wire, such as a coat hanger, may be inserted to break loose deposits. Use care.

## CYLINDER HEAD

### NOTE:

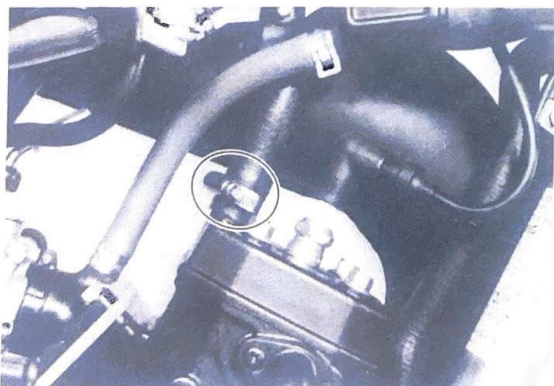
Before servicing the engine (disassembling of the cylinder head, cylinder, and clutch), thoroughly drain the coolant.

### Preparation for removal

1. Place the machine on machine stand. Start the engine and allow it to warm up. Stop the engine and drain the engine oil.
2. Drain off the coolant from the cooling system. (See cooling system section, paragraph "Coolant drain" Page 4-19.)

### Cylinder head removal

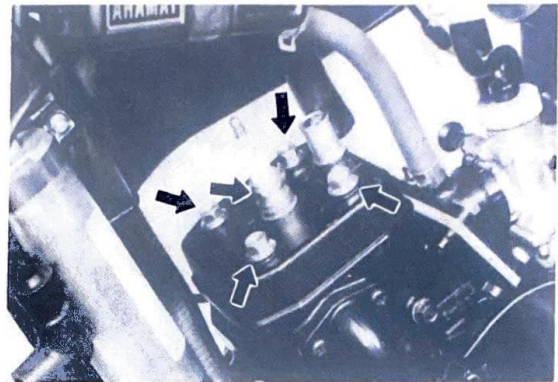
1. Disconnect radiator hose at cylinder head.



2. Remove the spark plug lead. Loosen, but do not remove the spark plug.
3. Remove the cylinder head holding nuts. Remove the cylinder head.

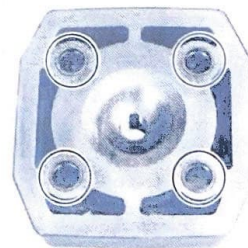
Cylinder head nut:

30 Nm (3.0 m·kg, 22 ft·lb)

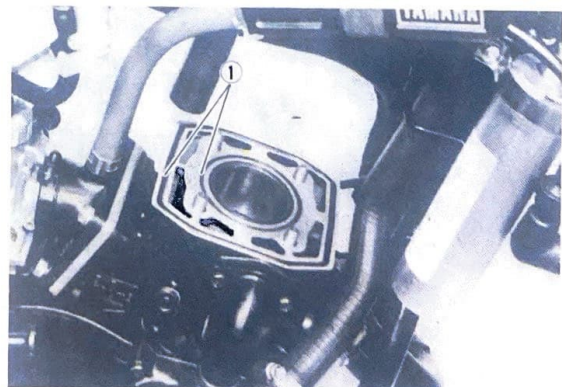


### NOTE:

There are 4 O-ring, one on each of the cylinder head holding holes on the back. Take care not to lose any of them when taking off the head.

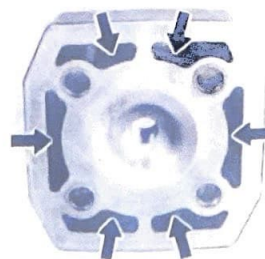
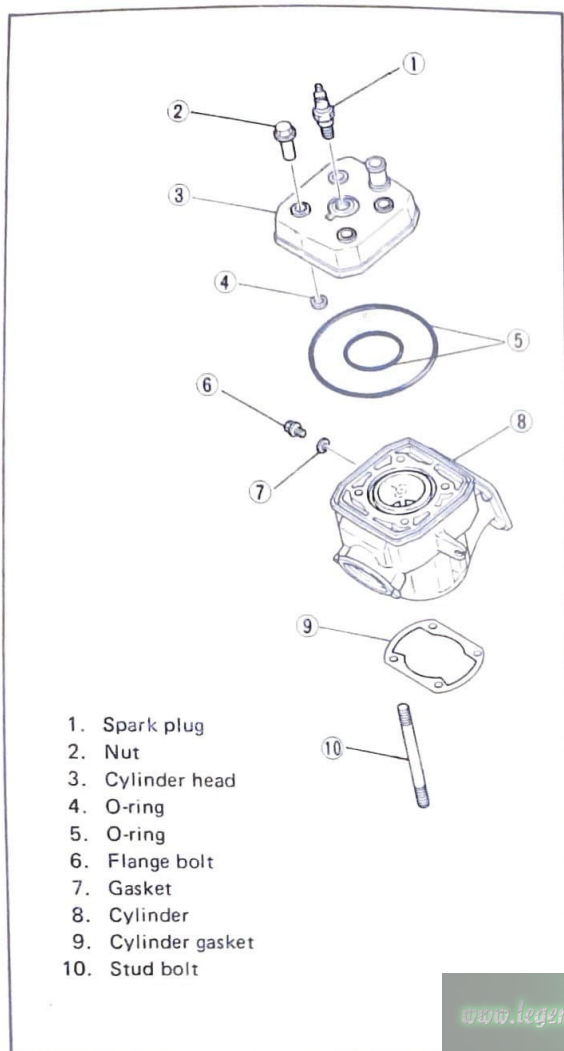


4. Remove the O-rings.



1. O-ring



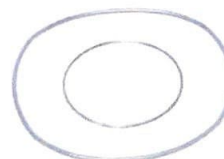
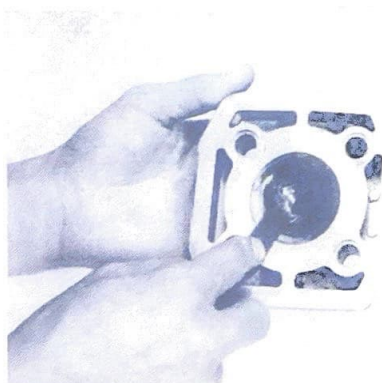


- Place the head on a surface plate. There should be no warpage. Correct by re-surfacing. Place 400 ~ 600 grit wet emery sandpaper on surface plate and re-surface head using a figure-eight sanding pattern. Rotate head several times to avoid removing too much material from onese.



## Maintenance

- Using a rounded scraper, remove carbon deposits from combustion chamber. Take care to avoid damaging the spark plug threads. Do not use a sharp instrument. Avoid scratching the metal surface.
- Check the cylinder head O-rings for damage or breakage, and replace them, as required.

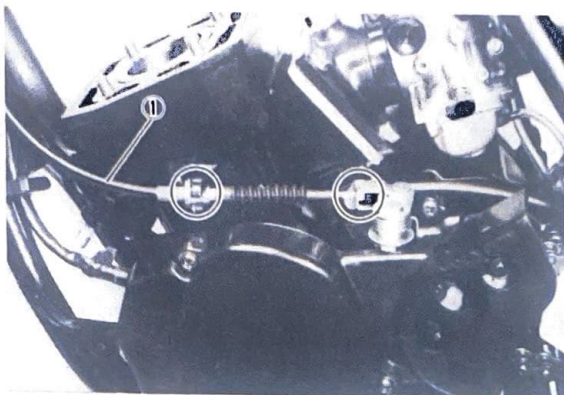


- Check for a crust of minerals and rust in the cylinder head water jacket, and remove if necessary.

## CYLINDER

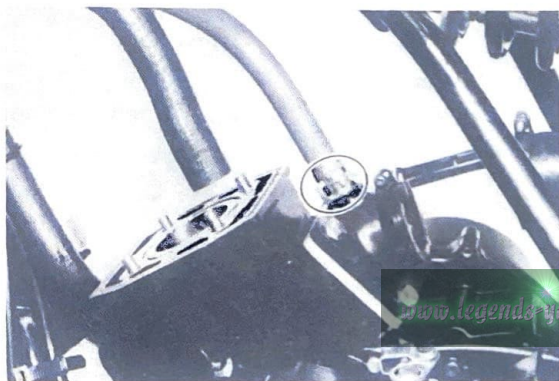
### Removal

1. Remove the clutch wire.



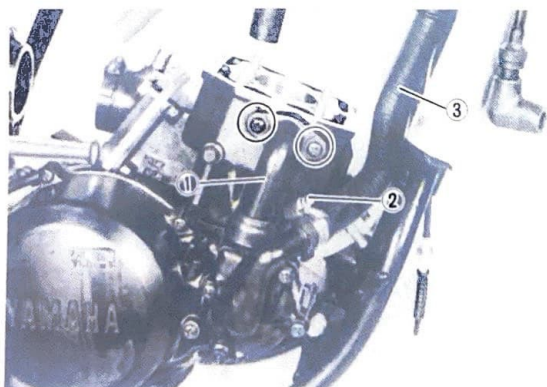
1. Clutch wire

2. Remove the muffler and carburetor.
3. Remove the YEIS hose.



4. Remove the bolt securing the pipe joint to the cylinder and remove the pipe joint from the pump cover.

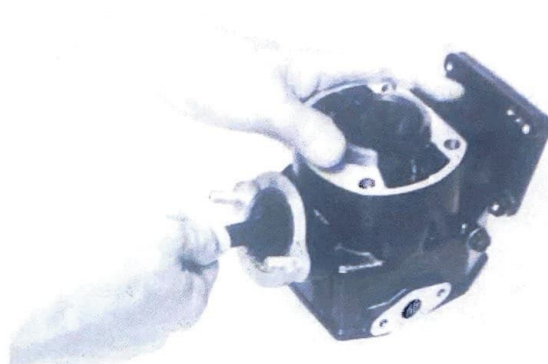
Loosen the radiator hose joint and remove the radiator hose from the housing cover.



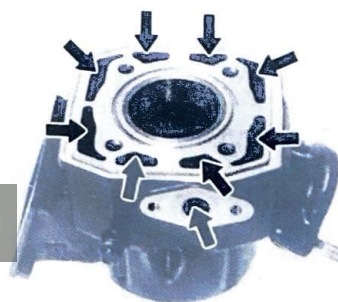
1. Joint 2. Radiator hose joint  
3. Radiator hose

### Maintenance

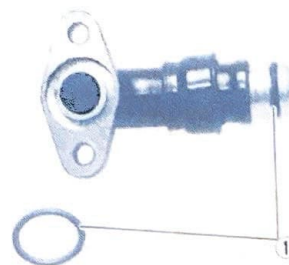
1. Using a rounded scraper, remove carbon deposits from exhaust port.



2. Check for a crust of minerals and rust in the cylinder water jacket, and remove if necessary.



3. Check the pipe joint O-ring, and if damaged or cracked, replace it.

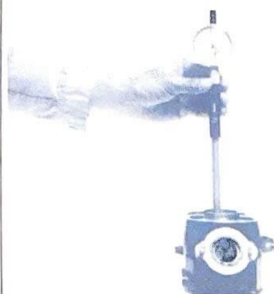
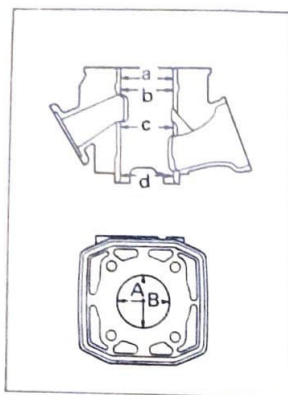


1. O-ring

4. Check cylinder bore. Using a cylinder hone, remove any scoring. Hone lightly, using smooth stones. Hone no more than required to avoid excess piston clearance.



- Using a cylinder gauge set to standard bore size, measure the cylinder. Measure front-to-rear and side-to-side at top, center and bottom just above exhaust port.



Compare minimum and maximum measurements. If over tolerance and not correctable by honing, rebore to next oversize.

Max. allowable taper:  
0.05 mm (0.0020 in)  
Max. allowable out-of-round:  
0.01 mm (0.0004 in)

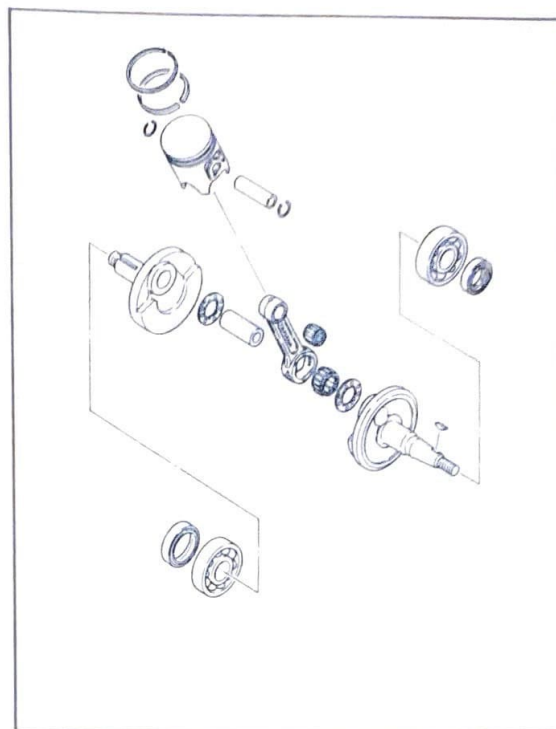
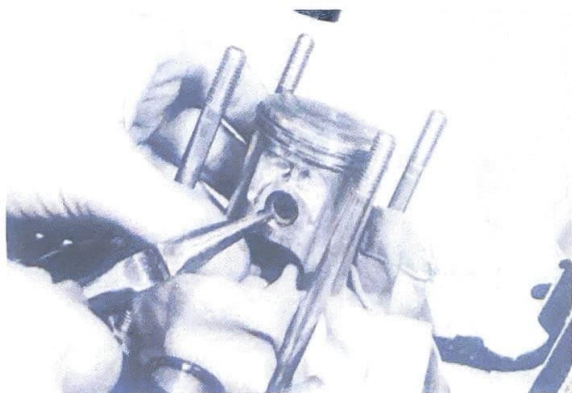
## PISTON ASSEMBLY

### Removal

Remove the piston pin clip from the piston. Push the piston pin out from opposite side. Remove the piston.

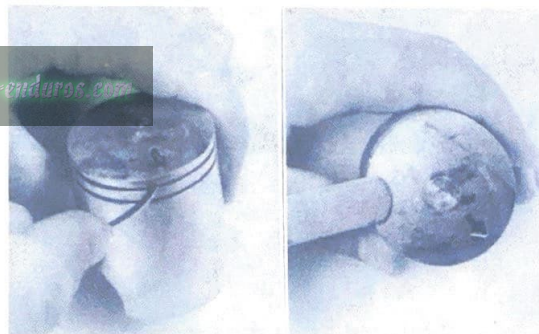
### NOTE:

If the pin hangs up, use a piston pin puller. Do not hammer on pin as damage to rod, piston and bearing will result.

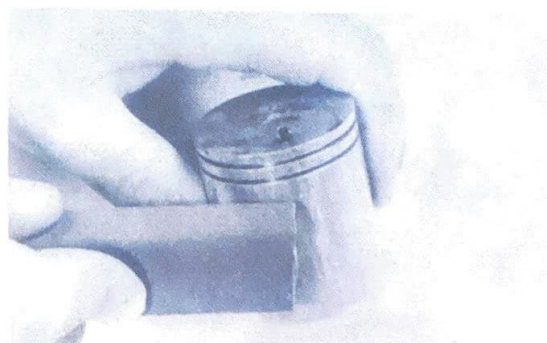


### Maintenance

- Using a rounded scraper, remove carbon deposits from piston crown and ring grooves.



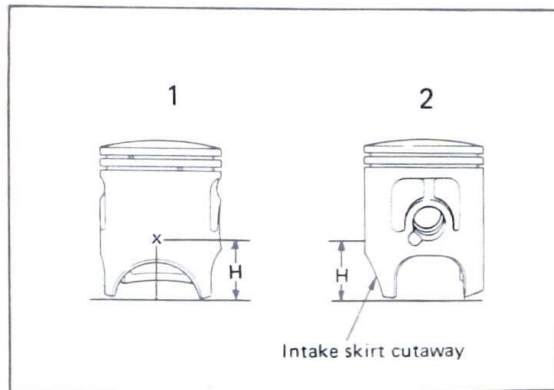
- Using 400 ~ 600 grit wet sandpaper, lightly sand score marks and lacquer deposits from sides of piston. Sand in cross-hatch pattern. Do not sand excessively.





## CUTAWAY PISTON MEASUREMENT

1. To measure a cutaway piston, measure across the skirts at height "H" (just above the intake skirt cutaway) as shown in illustrations 1 and 2. Record this partial measurement.

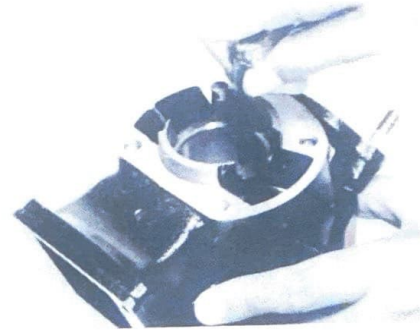


2. Add to this Partial Measurement (PM) the Adjustment Amount (AA) in the following table (PM + AA = piston diameter). The result will be the piston diameter. Use this figure to compute piston-to-cylinder clearance.

HEIGHT "H"	ADJUSTMENT AMOUNT (AA)
16 mm (0.63 in)	0.016 mm (0.0006 in)

▲

Ring end gap installed (top and 2nd):  
0.20 ~ 0.40 mm (0.008 ~ 0.016 in)



4. With rings installed in grooves, insert feeler gauge between ring and groove. If beyond tolerance, replace ring and/or piston as required.

Ring groove clearance:  
0.04 ~ 0.08 mm (0.0016 ~ 0.0031 in)

### Remember:

Partial measurement + adjustment amount  
= piston diameter.

### Example:

- ▲  $46.924 \text{ mm} + 0.016 = 46.940 \text{ mm diameter}$
- ▲  $(1.847 \text{ in} + 0.0006 \text{ in} = 1.8476 \text{ in})$

Do not try to measure from one of the intake "fingers" to the exhaust skirt. The piston will appear to be undersize. This is due to piston cam grind.

## PISTON CLEARANCE

= Minimum Cylinder Diameter –  
Maximum Piston Diameter

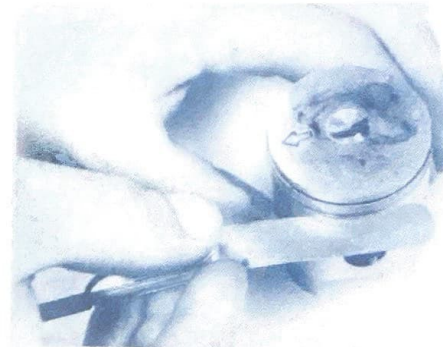
### Example:

- ▲  $47.003 \text{ mm} - 46.940 \text{ mm} = 0.063 \text{ mm}$
- ▲  $(1.850 \text{ in} - 1.8476 \text{ in} = 0.0024)$

Nominal piston clearance:  
0.060 ~ 0.065 mm  
(0.0024 ~ 0.0026 in)

If beyond tolerance replace piston or rebore cylinder as required.

5. Holding cylinder towards light, check for full seating of ring around bore. If not fully seated, check cylinder. If cylinder is not out-of-round, replace piston ring.
6. During installation, make sure ring ends are properly fitted around ring locating pin in piston groove. Apply liberal coating of two-stroke oil to ring.





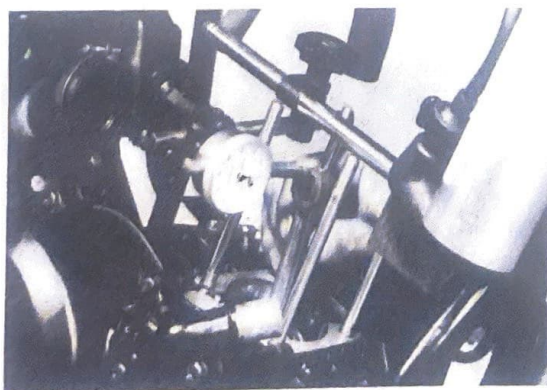
#### NOTE:

New rings require break-in. Follow first portion of new machine break-in procedure.

#### Piston pin bearing and connecting rod

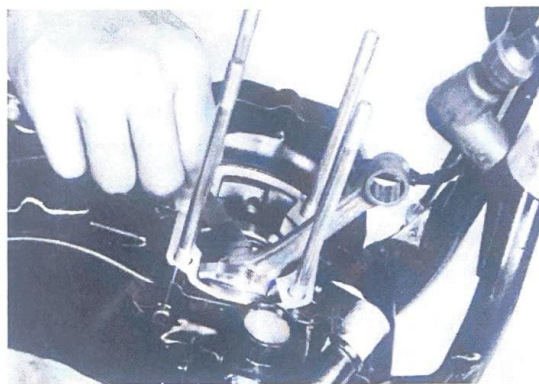
1. Check the pin for signs of wear. If any wear is evident, replace pin and bearing.
2. Check the pin and bearing for signs of heat discoloration. If excessive (heavily blued), replace both.
3. Check the bearing cage for excessive wear. Check the rollers for signs of flat spots. If found, replace pin and bearing.
4. Apply a light film of oil to pin and bearing surfaces. Install in connecting rod small end. Check for play. There should be no noticeable vertical play. If play exists, check connecting rod small end diameter for wear. Replace pin and bearing or all as required.
5. Mount the dial gauge at right angles to connecting rod small end holding the bottom of rod toward the dial indicator, rock top of rod and measure axial play.

Connecting rod axial play:  
 0.5 ~ 1.2 mm (0.020 ~ 0.047 in)  
 Wear limit: 2.0 mm (0.08 in)



6. Remove the dial gauge and slide the connecting rod to one side. Insert a feeler gauge between the side of the connecting rod big end and the crank wheel. Measure clearance.

Connecting rod/crank side clearance:  
 0.2 ~ 0.7 mm (0.008 ~ 0.028 in)

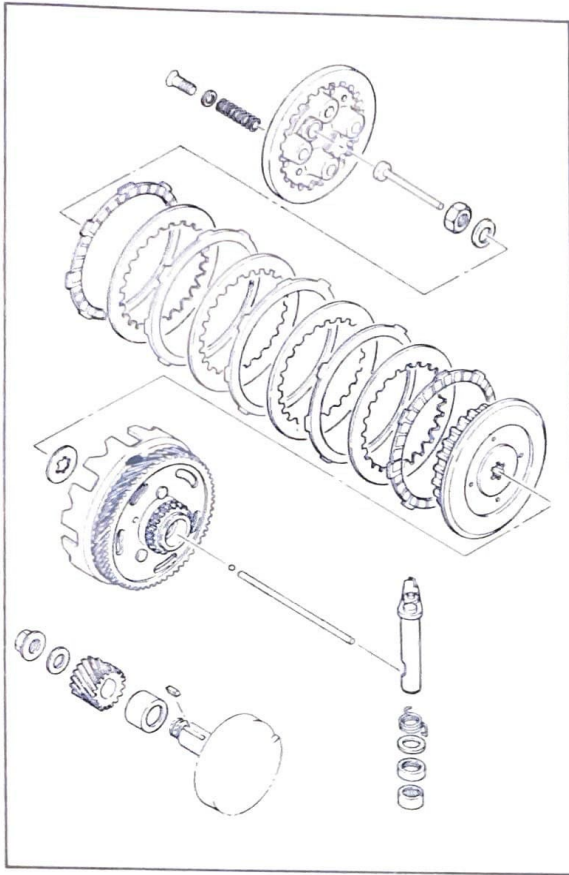


7. If any of the above measurements exceed tolerance, crankshaft repair is required. Take the machine to your authorized dealer.
8. During reassembly apply a liberal coating of two-stroke oil to the piston pin and bearing. Apply several drops of oil to the connecting rod big end. Apply several drops of oil into each crankshaft bearings oil delivery hole.





## CLUTCH

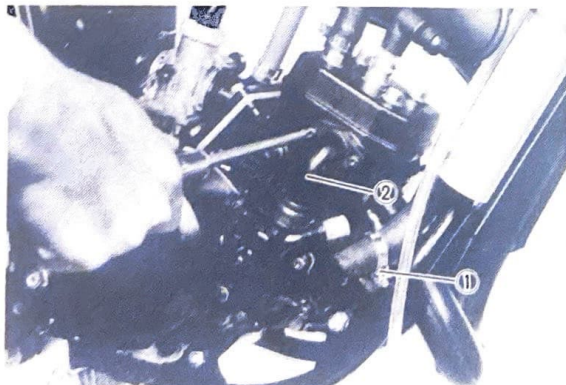


### NOTE:

Clutch adjustment is covered in Section "Adjustments".

### Removal

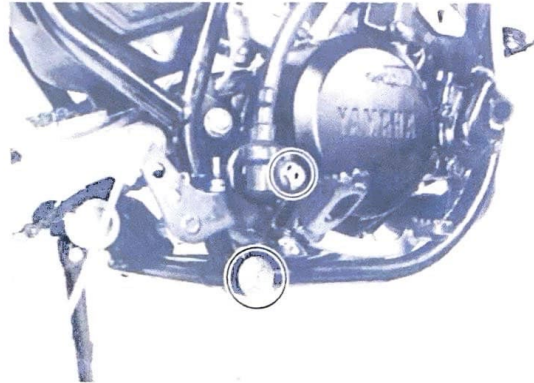
1. Drain off the transmission oil and coolant completely. (See cooling system section, paragraph "Coolant drain" page 4-19.)
2. Remove the joint and disconnect the radiator hose.



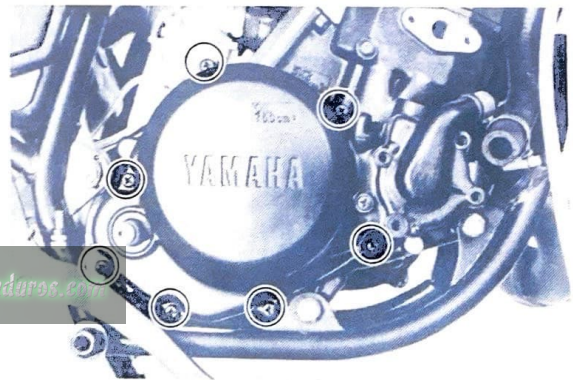
1. Hose

2. Joint

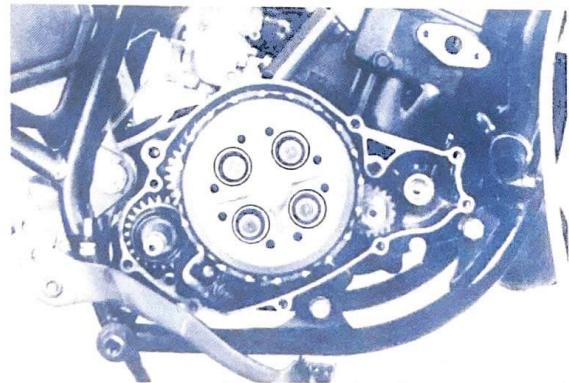
3. Remove the rear brake adjuster.
4. Remove the kick starter lever.
5. Remove the footrest.



6. Remove the pan head screws holding the case cover in place and remove the cover. Note the position of the dowel pins.



7. Remove the Phillips screw (4) holding the pressure plate. Remove the clutch springs (4), pressure plate and push rod. Remove the clutch plates and friction plates.

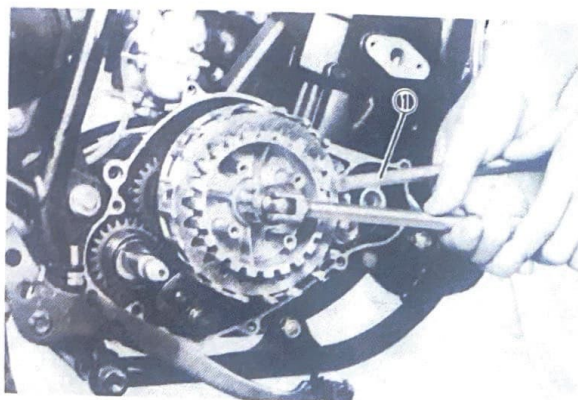




**NOTE:** \_\_\_\_\_

When removing Phillips (hexagon) spring screws, loosen each screw in several stages working in a crisscross pattern to avoid any unnecessary warpage. Note the condition of each piece as it is removed and its location with the assembly.

8. Using the clutch holding tool, remove the clutch securing nut and lock washer. Remove the clutch boss and driven gear (clutch housing).



1. Clutch holding tool

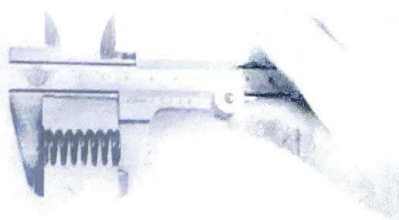
Clutch lock nut torque:

53 Nm (5.3 m·kg, 36 ft·lb)

**Maintenance**

1. Measure each clutch spring. If beyond tolerance, replace.

	New	Minimum
Clutch spring free length	31.5 mm (1.24 in)	30.5 mm (1.20 in)



2. Check the plates for signs of warpage and heat damage, replace as required.
3. Measure the friction plates at there or four points. If their minimum thickness exceeds tolerance, replace.

	New	Wear limit
Friction plate thickness	3.0 mm (0.12 in)	2.7 mm (0.11 in)



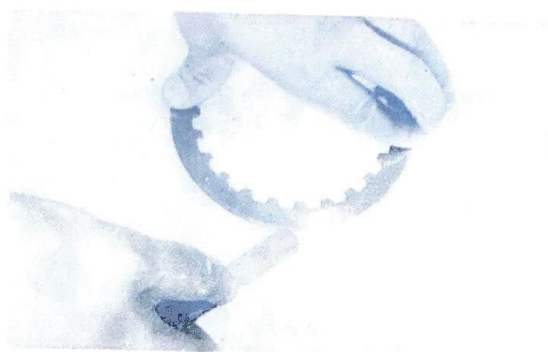
**NOTE:** \_\_\_\_\_

For optimum performance, if any plate requires replacement, it is advisable to replace the entire set.

4. Check each clutch plate for signs of heat damage and warpage. Place on surface plate (plate glass is acceptable) and use feeler gauge.

Clutch plate warp allowance limit:

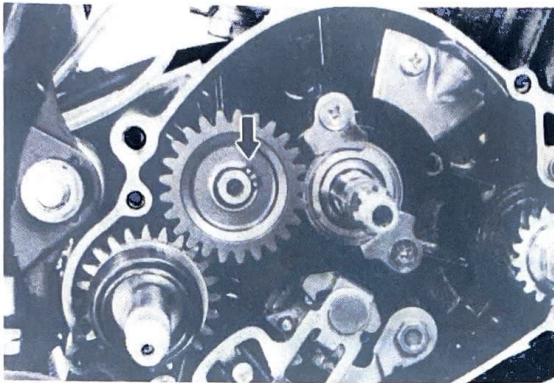
0.05 mm (0.002 in)



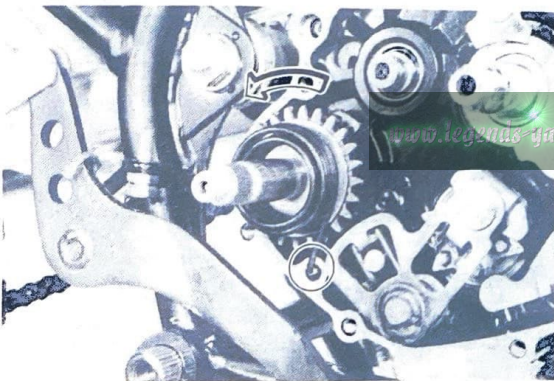
## KICK STARTER

### Removal

1. Remove the circlip and then remove kick idle gear.



2. Unhook the kick spring from its post in the crankcase. Allow it to relax. Then remove the kick axle assembly by rotating the shaft counterclockwise and then pulling out the entire assembly. Check the gear teeth for wear and breakage.



### Inspection

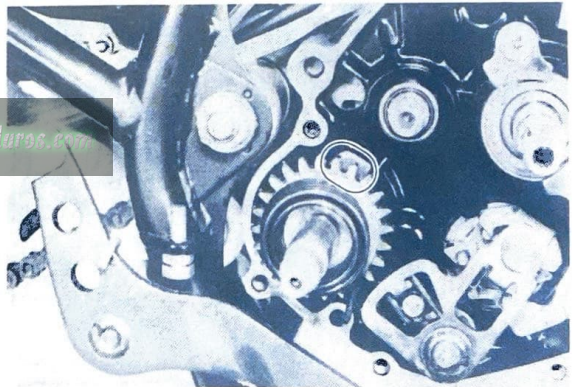
1. The pressure of the kick clip is 1.0 kg (2.2 lb).  
If above pressure is too strong, spring wear and kick starter slipping will result. If it is too weak, the same slippage will occur particularly at low temperatures. Do not try to bend the clip.



2. Check the clip for damage and wear, and determine whether or not, it should be replaced.

### Reassembly

1. While keeping the kick stopper upwards, engage the kick axle return spring with the slot on the end of the kick axle. And hook the spring to the spring hook. Check whether the kickstarter acts correctly and whether it returns to its home position.



2. After installing the kick ass'y be sure to check where it operates smoothly or not.

## SHIFTER

### NOTE:

Shifter maintenance and adjustment should be performed with clutch assembly removed.

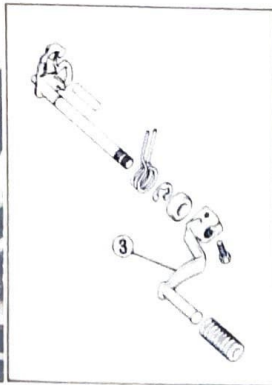
### Remove

1. Pull out the change lever assembly.
2. Shift into 2nd gear and unhook the stopper spring.
3. Remove the flange bolt, stopper lever and spring.





1. Charge lever assembly  
2. Segment



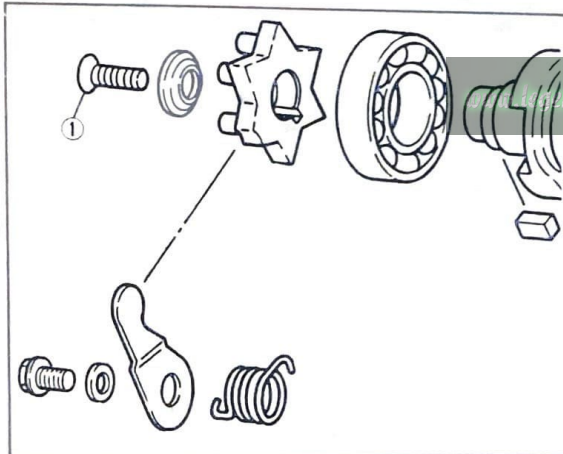
3. Change lever

### Inspection

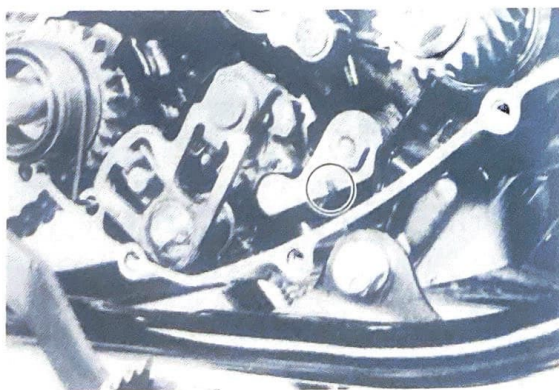
1. Inspect shift return spring. A broken or wear spring will impair the return action of the shifting mechanism.
2. Inspect change shaft assembly for bending of shaft, worm or bent splines, and broken or wear shift arm spring. A bent shaft will cause hard shifting.

### Installation

1. Apply a holding agent, such as "Loctite", to threads of flat head screw.



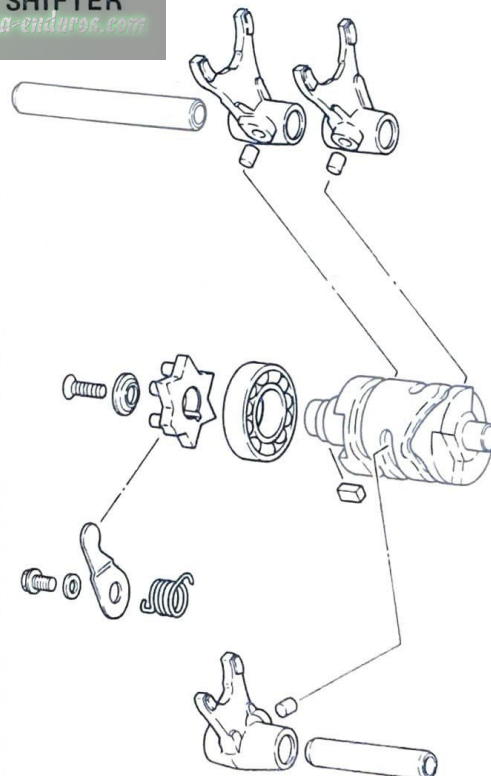
1. Apply a holding agent
2. Engage the shift return spring with its home position.



### KICK STARTER

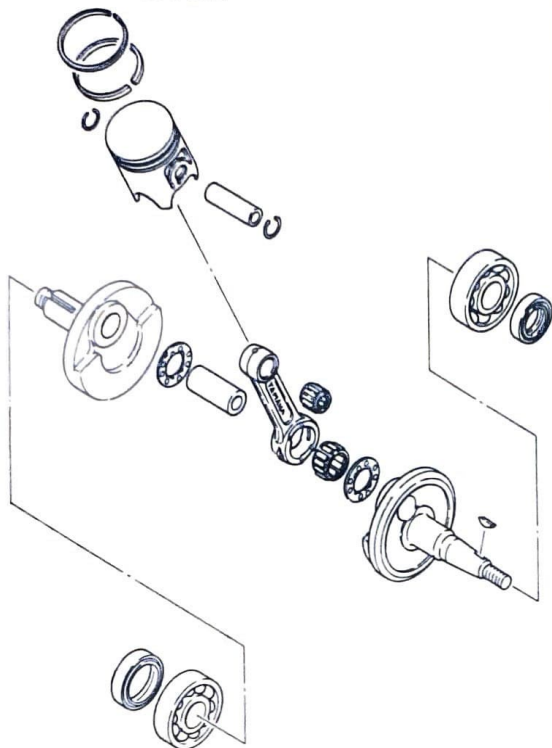


### SHIFTER

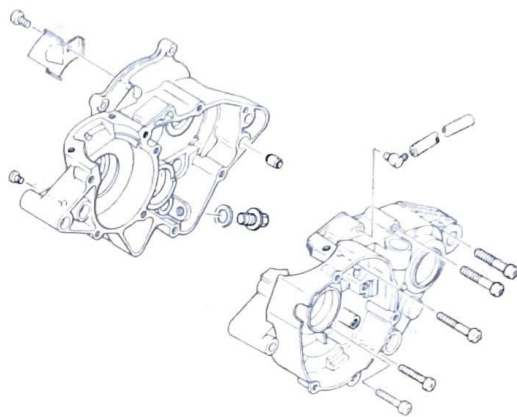




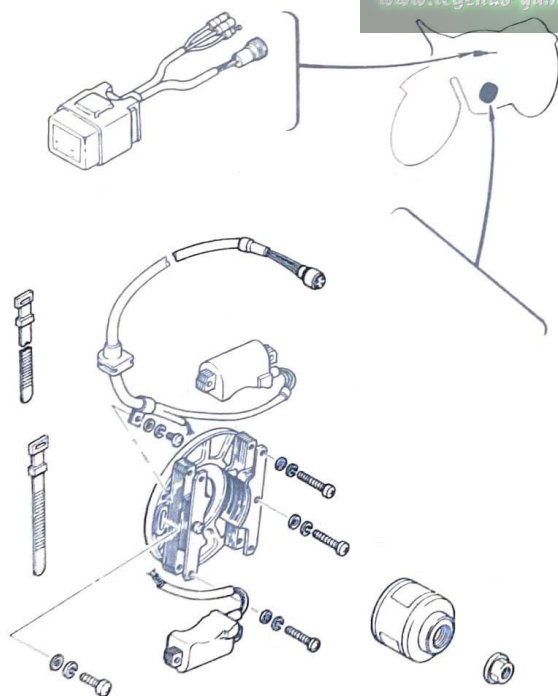
## CRANK · PISTON



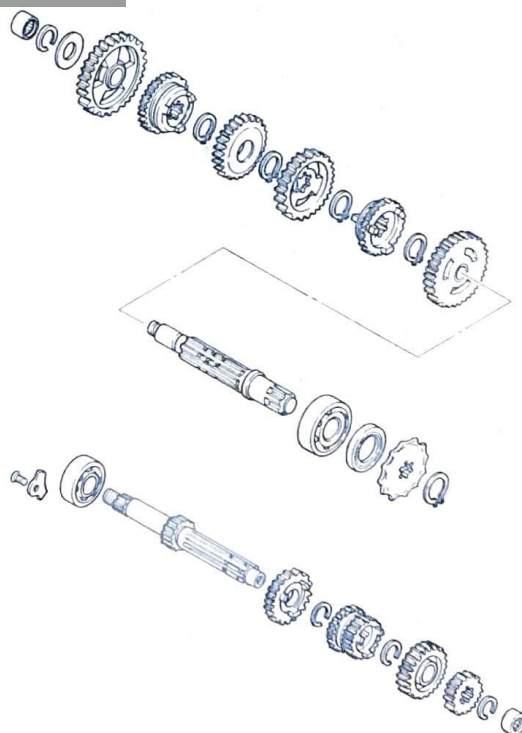
## CRANKCASE



## CDI MAGNETO



## TRANSMISSION



## COOLING SYSTEM

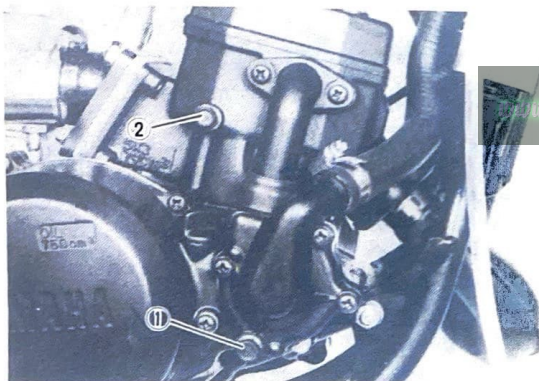
### COOLANT

#### Coolant draining

##### WARNING:

Do not remove the radiator cap, drain bolts and hoses especially when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, place a thick rag like a towel over the radiator cap, slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.

1. Place a container under the engine.
2. Remove the radiator tank cap.
3. Gently loosen the pump cover drain screw to drain the coolant, and remove the cylinder drain bolt.



1. Pump cover drain bolt      2. Cylinder drain bolt

4. Drain the coolant completely. Thoroughly flush the cooling system with clean tap water.

##### CAUTION:

Take care so that coolant does not splash to painted surfaces. If splashes, wash it away with water.

5. Retighten the drain bolts.  
If the gasket is damaged, replace it.

#### Replenishing coolant

##### NOTE:

Before pouring the coolant into the radiator, check the cooling system for damage, loose joints or leaks.

1. Pour the recommended coolant into the radiator up to the specified level.

##### Recommended coolant:

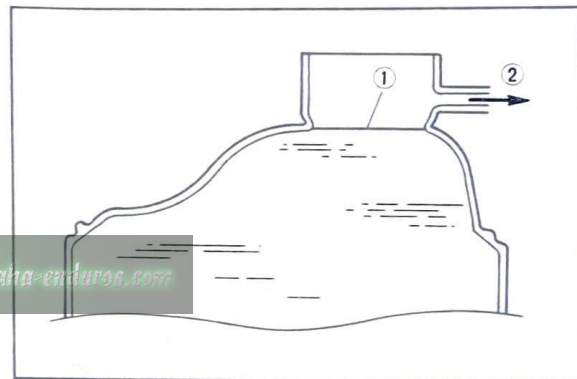
High quality ethylene glycol anti-freeze containing corrosion inhibitors for aluminum engine

##### Coolant and water mixed ratio:

50%/50%

##### Total amount:

1.1 L (1.0 Imp qt, 1.2 US qt)



1. Coolant level      2. Breather pipe

##### CAUTION:

Do not mix more than one type of ethylene glycol anti-freeze containing corrosion inhibitors for aluminum engine.

Hard water or salt water is harmful to the engine parts. You may use boiled water or distilled water, if you can't get soft water.

2. After starting the engine, race the engine a few times and add the coolant again up to the specified level.
3. When the coolant level becomes stable, stop the engine and tighten the radiator cap.

## WATER PUMP

### Disassembly

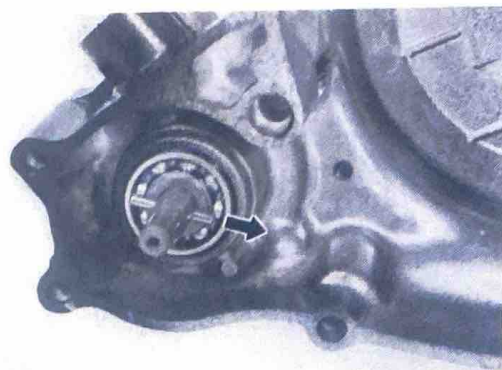
#### NOTE:

It is necessary to disassemble the water pump, unless there is no abnormality such as excessive change in coolant level, discoloration of coolant, or milky transmission oil.

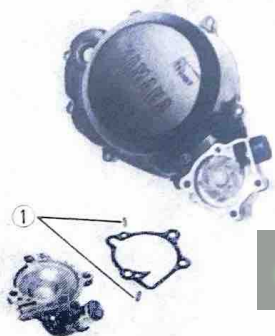
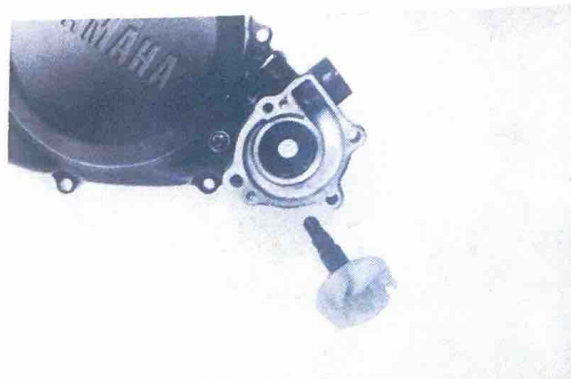
1. Drain off the coolant completely.
2. Drain off the transmission oil.
3. Remove the pump cover, gasket and knock pin. And remove crank case cover right.

#### NOTE:

Be careful so that the knock pin is not lost.

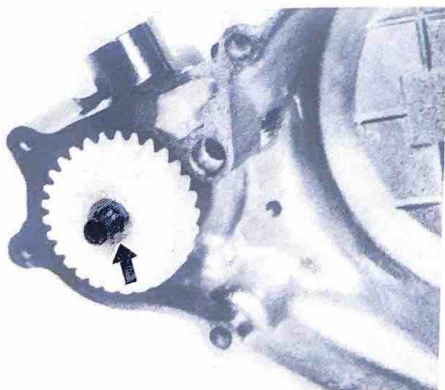


6. Pull out the impeller shaft assembly.

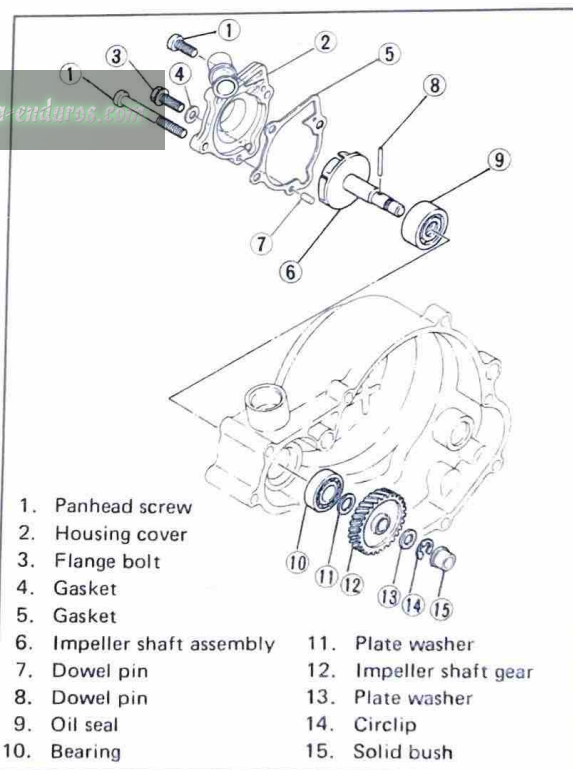


1. Knock pin

4. Remove circlip and plate washer.



5. Remove the pin and washer.



### Cleaning and inspection

1. Check the impeller shaft and washer pump for incrustation. Clean off any incrustation.



2. Check the oil seal and bearing for damage or wear. If there is any damage or wear, replace the oil seal and bearing in a set.
3. Install bearing with their manufacturer's or numbers facing outward.

**NOTE:**

Install the oil seal, with the "WATER SIDE" mark is on the outside.

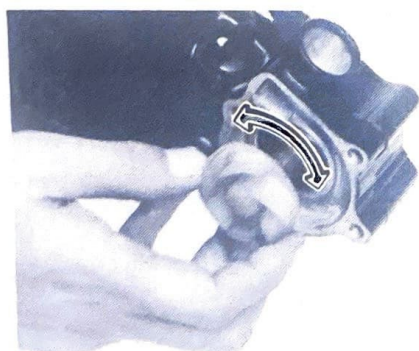
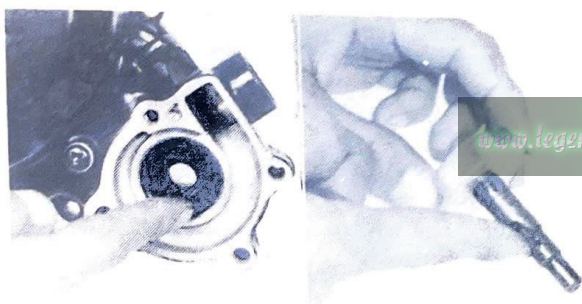
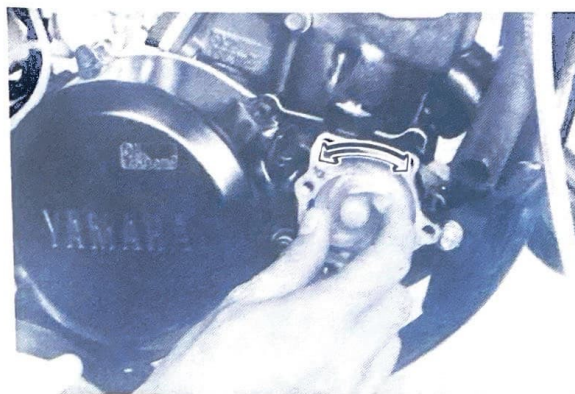
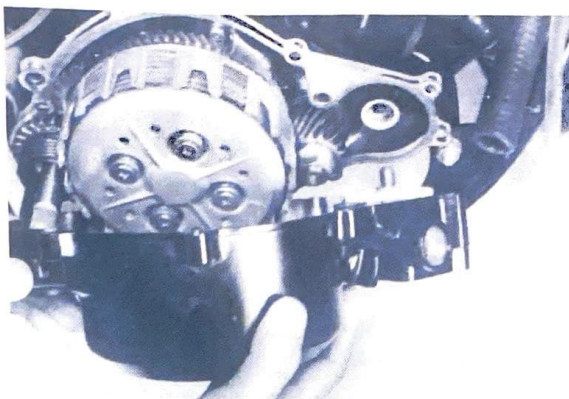
**Reassembly**

For reassembly, reverse the procedure for disassembly while taking the following care:

1. When installing the impeller shaft, apply a grease to oil seal and impeller shaft. And install the shaft while turning it.

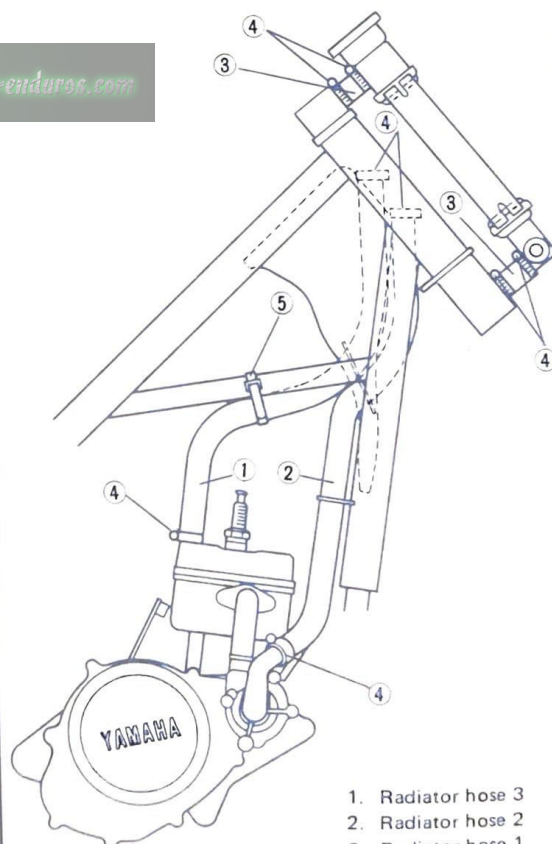
**NOTE:**

Take care so that the oil seal lip is not damaged or the spring does not slip off its position.



2. When installing the case cover, by turning the impeller lightly, make sure the shaft is in complete mesh with the gear.

Hose Routing Diagram



1. Radiator hose 3
2. Radiator hose 2
3. Radiator hose 1
4. Radiator hose joint
5. Band

## **5 CHASSIS MAINTENANCE AND REPAIR**

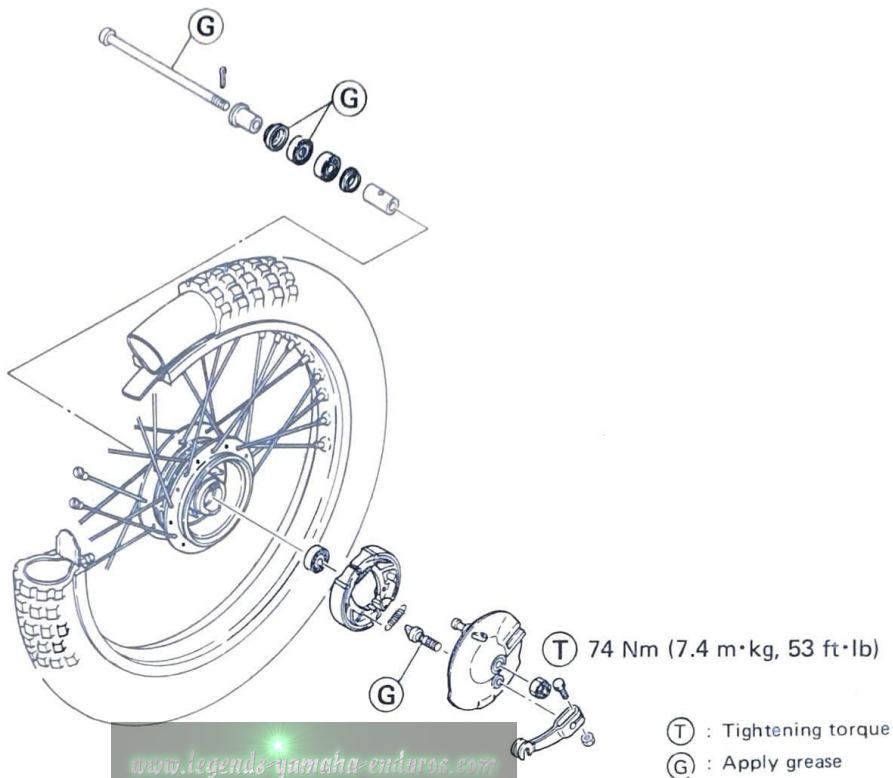
<b>WHEEL ASSEMBLIES, SPROCKETS AND CHAIN</b> .....	5-1
Front wheel removal .....	5-2
Rear wheel removal .....	5-2
Wheel installation .....	5-2
Rims and spokes .....	5-3
Bearings .....	5-3
Brake shoe inspection .....	5-3
Brake drum .....	5-3
Sprockets and chain .....	5-3
<b>FRONT FORK</b> .....	5-5
Disassembly .....	5-5
<b>STEERING HEAD</b> .....	5-5
Inspection .....	5-6
Assembly .....	5-6
<b>REAR SHOCK</b> .....	5-8
Removal and installation .....	5-8
Notes on disposal .....	5-11
<b>SWINGARM</b> .....	5-11
Inspection .....	5-11

## 5 CHASSIS MAINTENANCE AND REPAIR

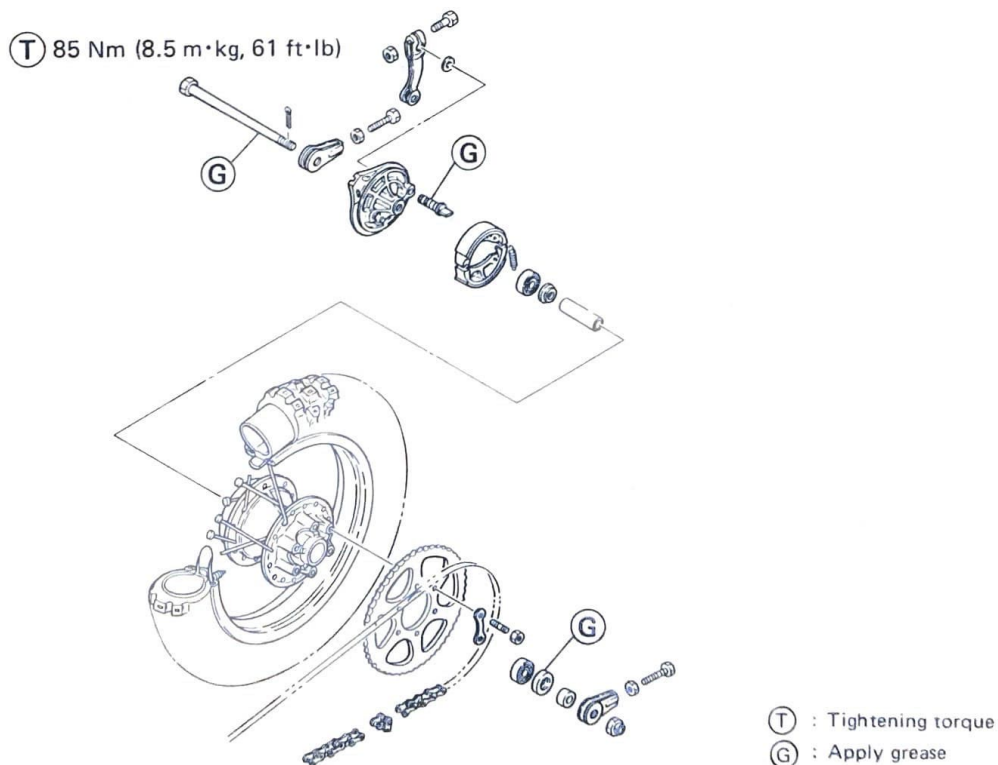
### WHEEL ASSEMBLIES, SPROCKETS AND CHAIN

Whenever performing chassis work, always take extra care and double-check each step of each procedure. The wheels, brakes, suspension, steering, and frame must all be in top condition to provide optimum performance, reliability, and safety.

#### FRONT WHEEL



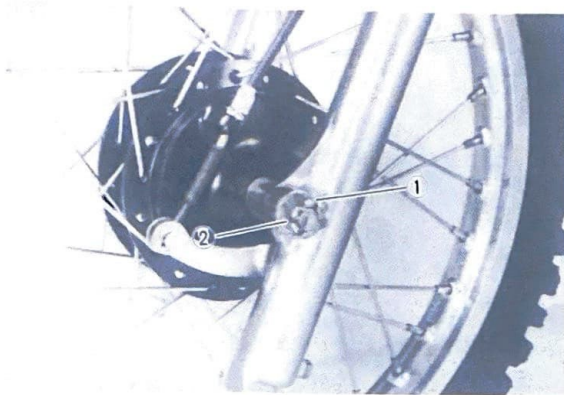
#### REAR WHEEL





### Front wheel removal

1. Elevate the front wheel by placing a suitable stand under the engine.
2. Remove brake cable: Loosen all cable adjuster screws and remove cable from handle lever holder. Then remove cable from cam lever at front brake shoe plate.
3. Remove cotter pin from front wheel axle and remove axle nut.

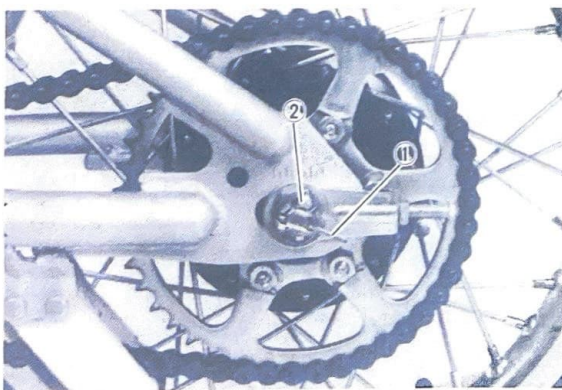


1. Cotter pin      2. Axle nut

4. Turn and pull out the front wheel axle; the wheel assembly can now be removed.

### Rear wheel removal

1. Elevate the rear wheel by placing a suitable stand under the engine.
2. Remove the brake adjuster and brake rod from the brake arm.
3. Remove the cotter pin from the axle nut and loosen the axle nut.



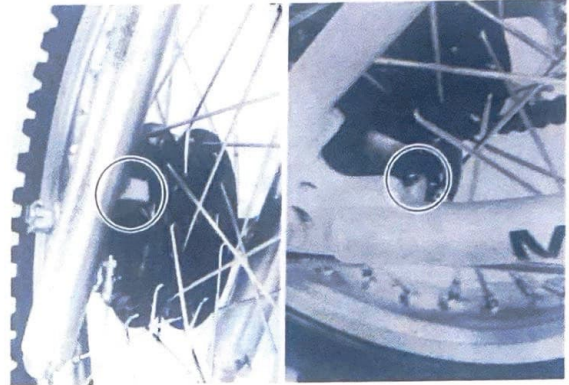
1. Cotter pin      2. Axle nut

4. Remove the link clip and joint link and remove the chain.
5. Pull the wheel backward, remove the rear wheel assembly.

### Wheel installation

When installing wheels, reverse the removal procedure taking care of the following points.

1. Lightly smear grease on:
  - \* The shafts
  - \* The bearings and oil seal lips
2. Check for proper engagement of the boss on the outer tube with the locating slot on the brake shoe plate.



3. Insert the new cotter pin into the wheel axle nut.

#### **WARNING:**

Always use a new cotter pin on the axle nut.

4. Make sure nuts are properly tightened.

Front wheel axle:

74 Nm (7.4 m·kg, 53 ft·lb)

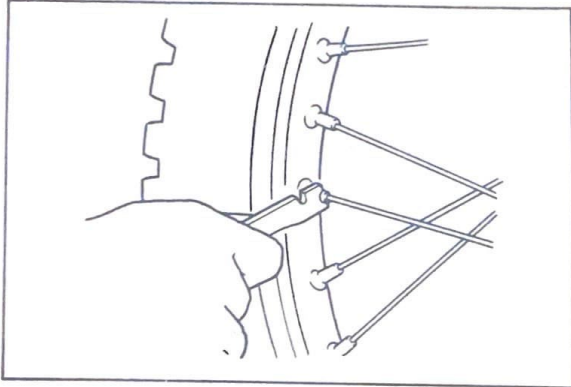
Rear wheel axle:

85 Nm (8.5 m·kg, 61 ft·lb)

5. Be sure to adjust the tension of the chain. (Refer to "Drive chain tension adjustment".)
6. Adjust the plays in the brake lever and pedal.

## Rims and spokes

1. Block the wheels off the ground.
2. Spin the wheels and observe the amount of runout.
3. If the runout exceeds 2.0 mm (0.080 in), true the wheels.
4. Tap each spoke with a spoke wrench to determine if any spokes are loose; tighten all loose spokes and replace bent spokes.



5. If a rim is severely "dinged" or bent, replace the rim.

## Bearings

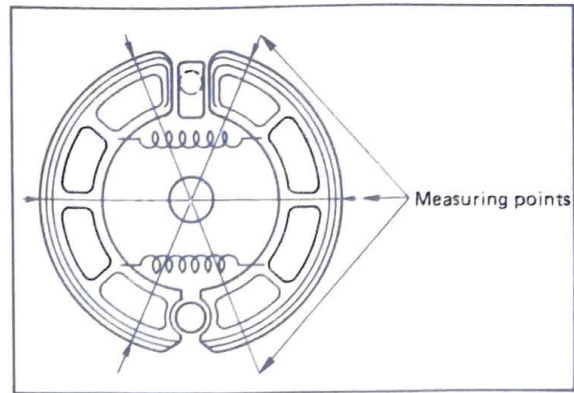
1. To inspect the wheel bearings, try to move the wheel sideways in relation to the fork in the front or the frame in the rear. If any movement is felt; the bearings must be replaced.
2. Block the wheels off the ground and spin each wheel. If the wheels do not spin freely with the brakes disengaged, the bearings must be replaced. If bearings need replacement, take the wheels to your Yamaha dealer for this service.

## Brake shoe inspection

Measure the outside diameter of the brake shoe set with slide calipers.

If they measure less than replacement limit, replace them. Smooth out any rough spots on shoe surface with sandpaper.

	Front	Rear
Brake shoe diameter	95 mm (3.74 in)	95 mm (3.74 in)
Replacement limit	92 mm (3.62 in)	92 mm (3.62 in)

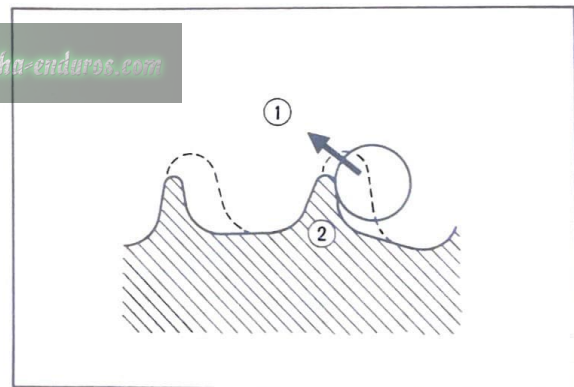


## Brake drum

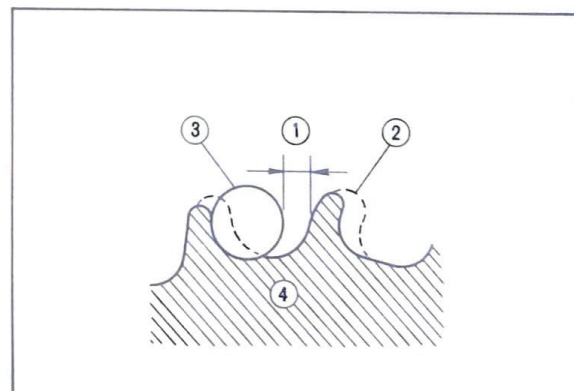
Inspect the brake drum; if there is any oil or dirt on the inner surface, wipe the drum clean with a rag dampened with lacquer thinner or solvent. If the drum is deeply grooved, the drum must be replaced.

## Sprockets and chain (Adjustment begins on page 2-12)

1. Inspect the teeth on the rear sprocket; if they are worn as shown in the illustrations below, replace the sprockets and chain as a set.

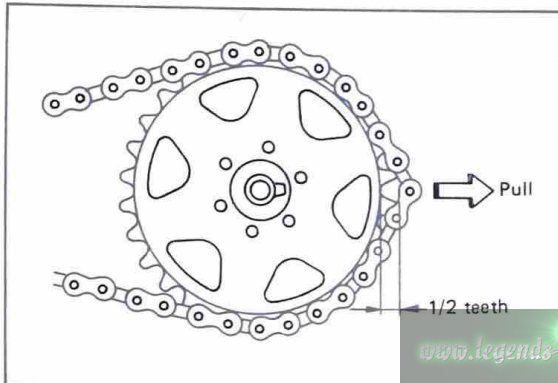
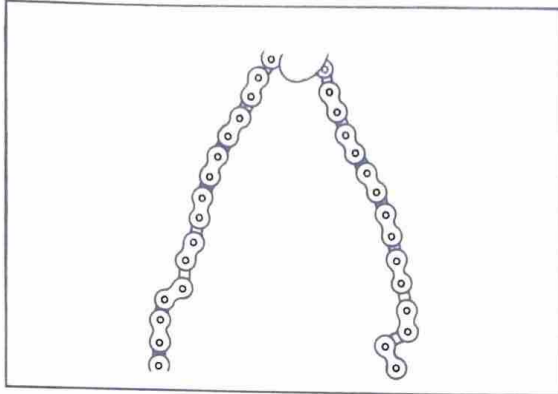


1. Slip off 2. Bend teeth



1. 1/4 tooth 2. Correct 3. Roller 4. Sprocket

2. If the chain stays bent or kinked after cleaning and lubrication, or if the chain can be pulled away from the sprocket more than 1/2 the length of a sprocket tooth, the chain and sprockets should be replaced as a set.

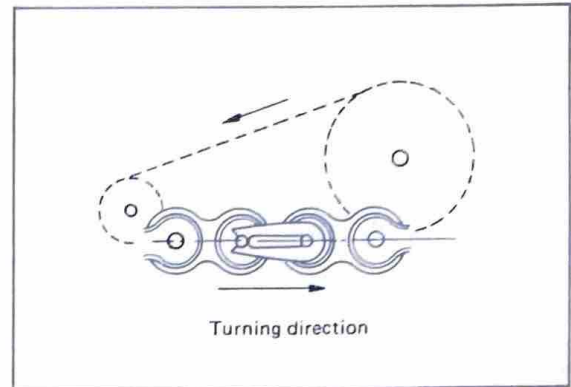


Drive sprocket securing nut torque:  
75 Nm (7.5 m·kg, 53 ft·lb)

Driven sprocket securing nut torque:  
26 Nm (2.6 m·kg, 19 ft·lb)

3. When installing the driven sprocket, lightly smear grease on the fitting bolts.
4. During reassembly, the master link clip must be installed with the rounded end facing the direction of travel.

**NOTE:** \_\_\_\_\_  
The chain should be cleaned and lubricated after every use of the machine.  
\_\_\_\_\_





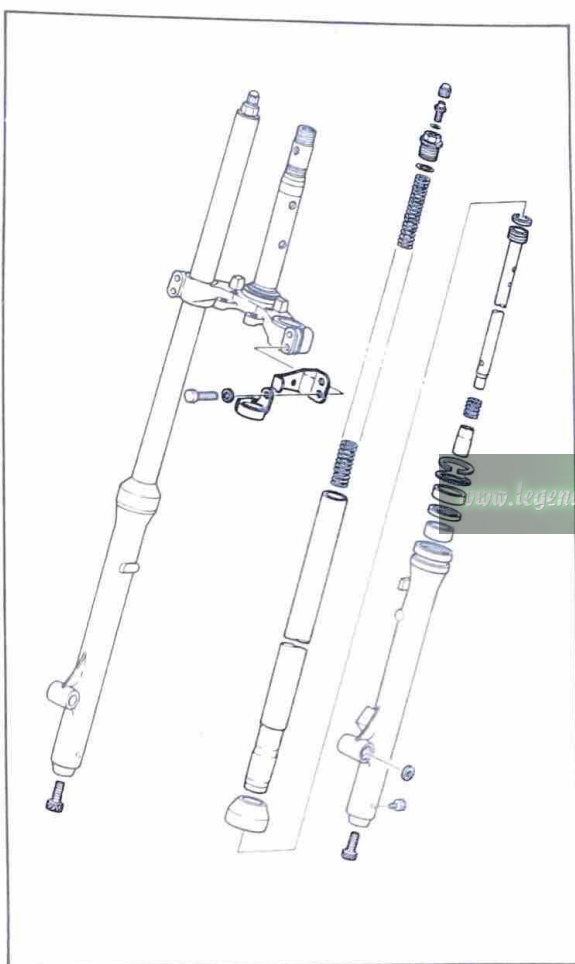
## FRONT FORK

(Tuning begins on chapter 3)

### CAUTION:

To prevent an accidental explosion of air, the following instructions should be observed.

1. Use only air or nitrogen for filling. Never use any other gas. An explosion may result.
2. Never throw the front fork into fire.
3. Before removing the front fork, be sure to extract the air from the air chamber completely.

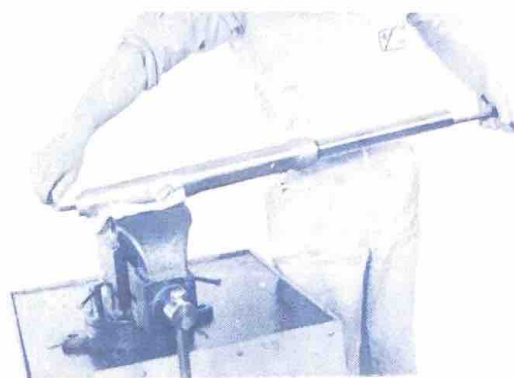


### Disassemble

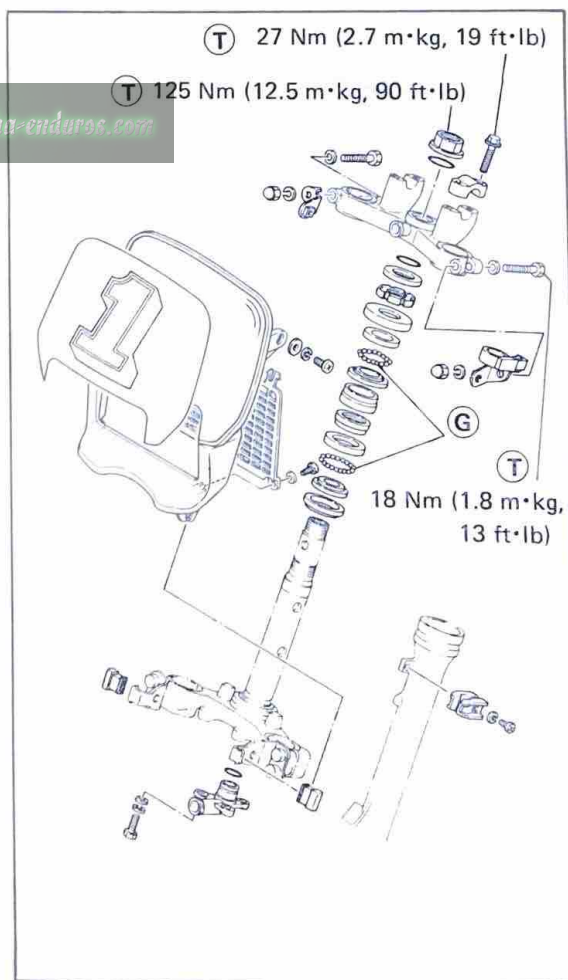
To disassemble the front fork assembly, remove the cylinder holding bolt from the bottom of the outer tube and pull the inner and outer tubes apart.

### NOTE:

Use the fork cylinder holder and adapter for removing the cylinder holding bolt.



## STEERING HEAD



## Inspection

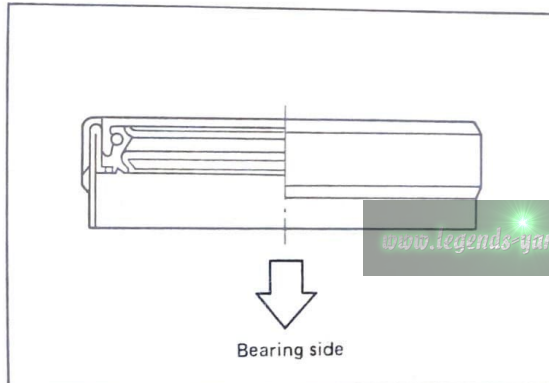
1. Wash the bearings in solvent.
2. Inspect the bearings for pitting or other damage. Replace the bearings if pitted or damaged. Replace the races when bearings are replaced.
3. Clean and inspect the bearing races. If races are damaged, replace the races and bearings.
4. Install the bearings in the races. Spin the bearings by hand. If the bearings hang up or are not smooth in their operation in the races, replace bearings and races.

## Assembly

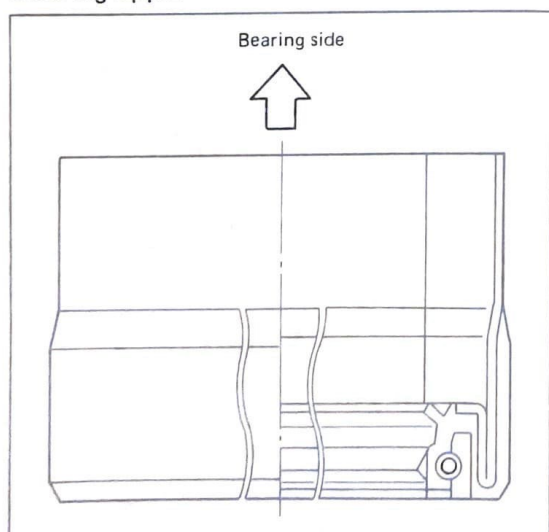
For assembly, reverse the procedure for disassembly but take the following precautions:

1. Install the oil seal so that its identification mark faces outward.

### Steering lower

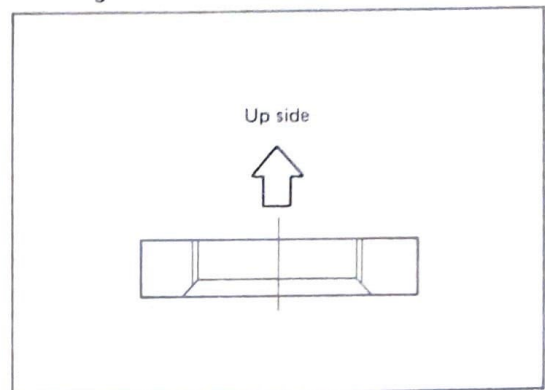


### Steering upper

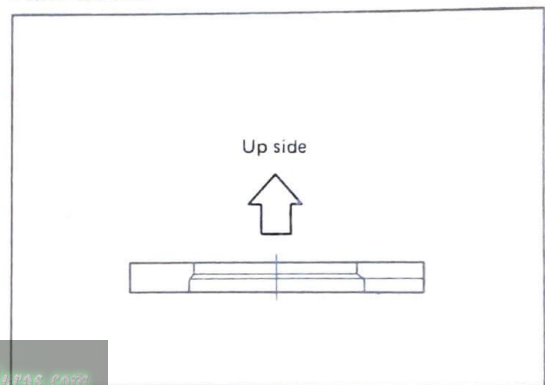


3. Take special care so that the steering nut and plate washer are installed facing correctly.

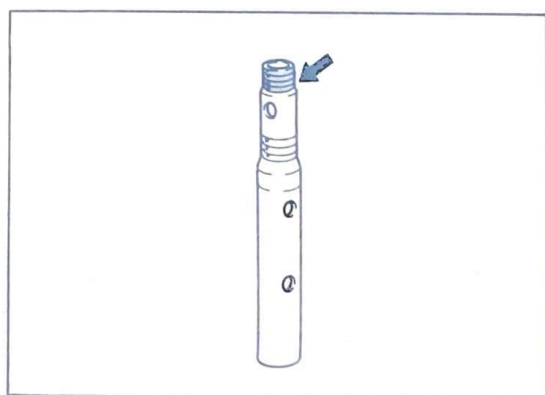
### Steering nut



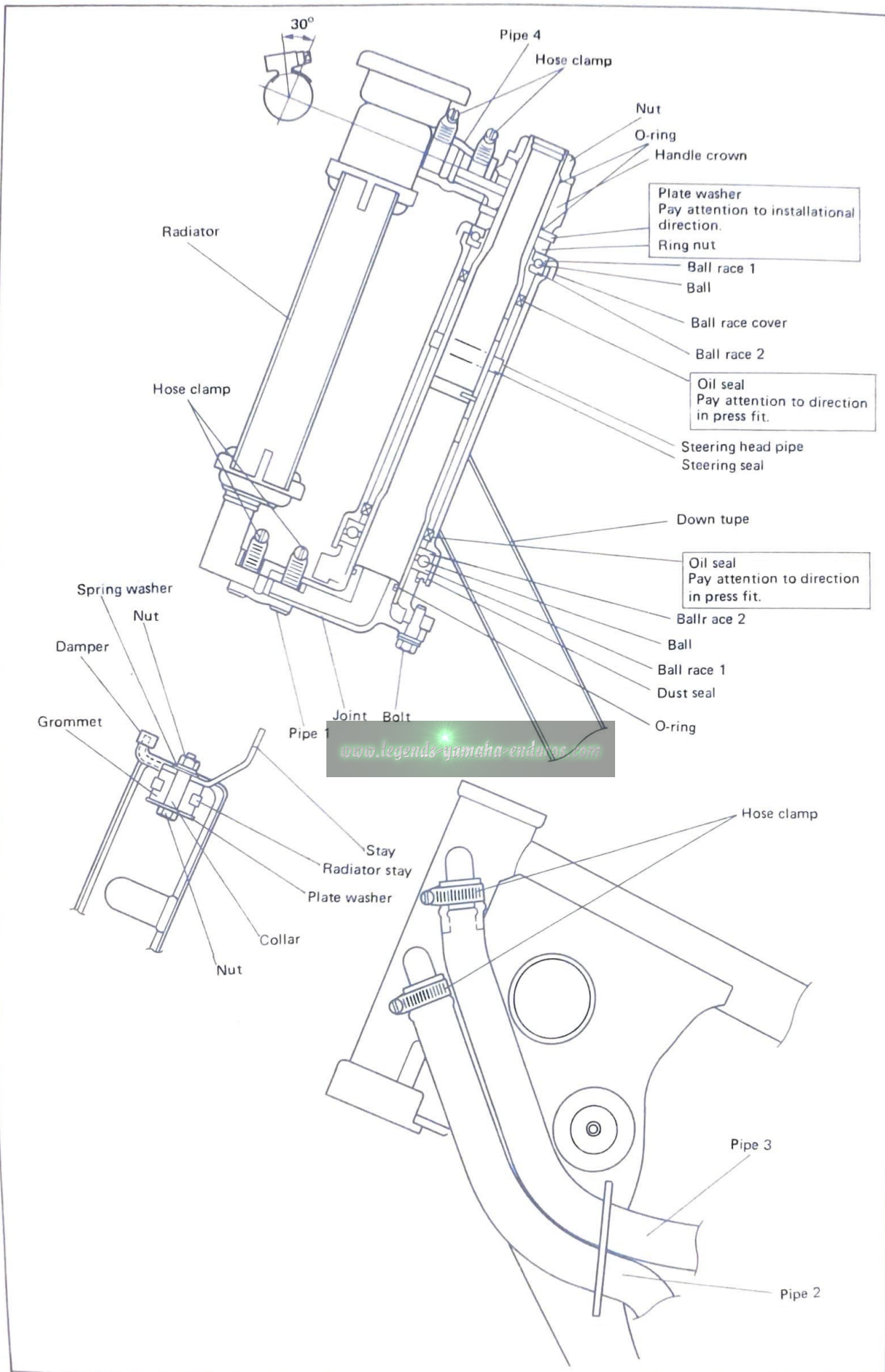
### Plate washer



4. When installing the steering shaft, wind or wrap the threaded portion with a vinyl tape or vinyl sheet.



2. Coat the oil seal(s) and bearing(s) with heat-resistant grease (Shell Retinax A) before installing.





## REAR SHOCK

(Tuning begins on page 3-6 of chapter 3.)

### WARNING:

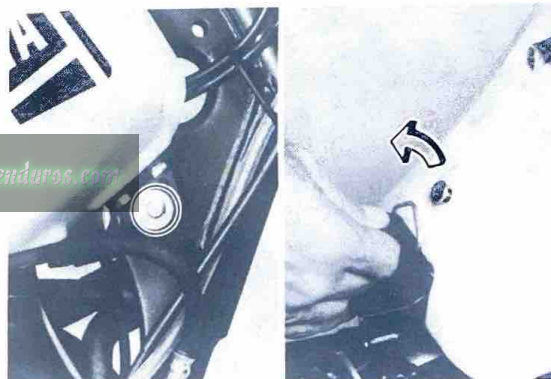
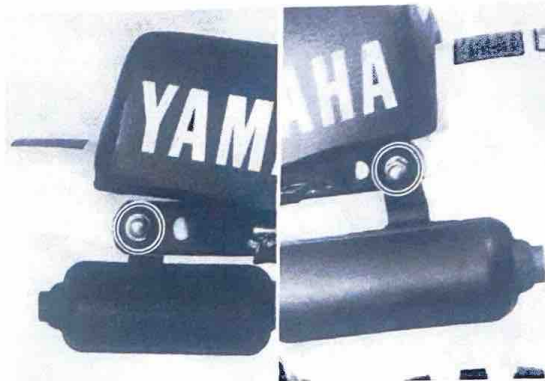
This shock absorber is provided with a separate type tank filled with high-pressure nitrogen gas. To prevent the danger of explosion, read and understand the following information before handling the shock absorber.

The manufacturer can not be held responsible for property damage or personal injury that may result from improper handling.

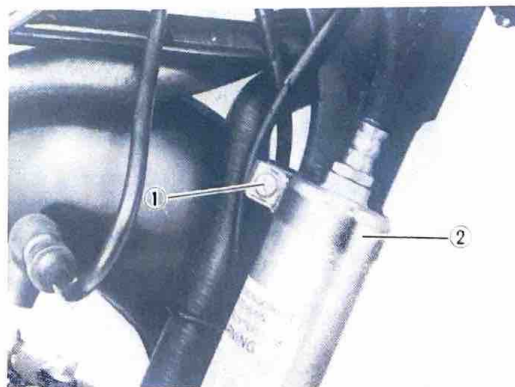
1. Never tamper or attempt to disassemble the cylinder or the tank. Never tamper with the nut securing the hose to the cylinder assembly:
2. Never throw the shock absorber into an open flame or other high heat. The shock absorber may explode as a result of nitrogen gas expansion and/or damage to the hose.
3. Be careful not to damage any part of the gas tank. A damaged gas tank will impair the damping performance.
4. Use care not to damage any part of the hose. Any break in the hose may result in a spurt of oil under high-pressure.
5. Take care not to scratch the contact surface of the piston rod with the cylinder; or oil could leak out.
6. Never attempt to remove the plug at the bottom of the nitrogen gas tank. It is very dangerous to remove the plug.
7. When scrapping the shock absorber, follow the instructions on disposal.

### Removal and installation

1. To remove the shock absorber, first place the machine on a suitable stand to keep the bike stable.
2. Remove the seat and fuel tank; be sure to remove the YEIS air chamber from beneath the fuel tank, and turn the petcock off before removing the fuel line.

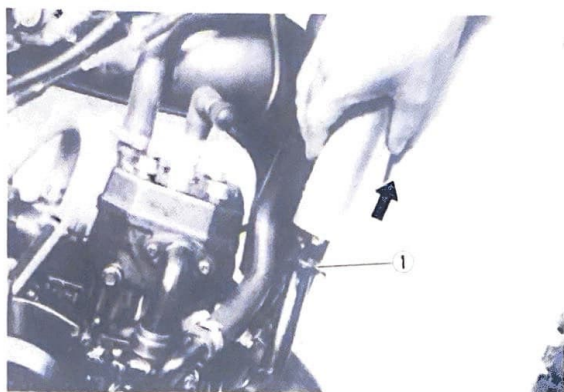


3. Remove the clamp holding the top of the remote shock reservoir to the frame, and pull the reservoir out of the grommet.



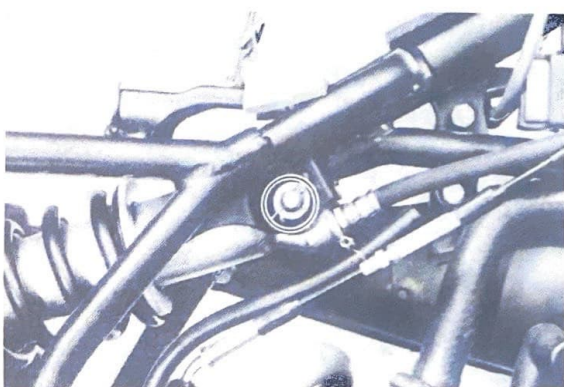
1. Fitting screw

2. Holder



1. Grommet

4. Remove the cotter pin. And remove the pin securing the upper bracket to frame.



5. Remove the cotter pin and remove the pin from the lower bracket.



6. Remove the shock absorber from the frame.

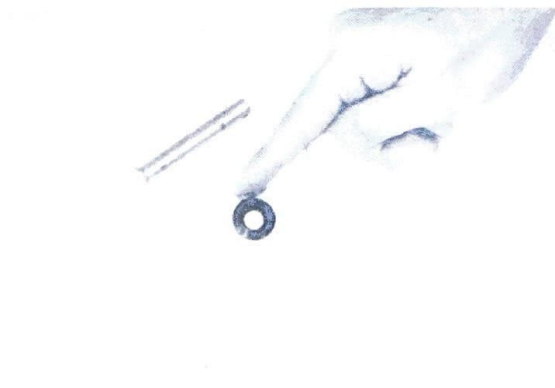
**NOTE:**

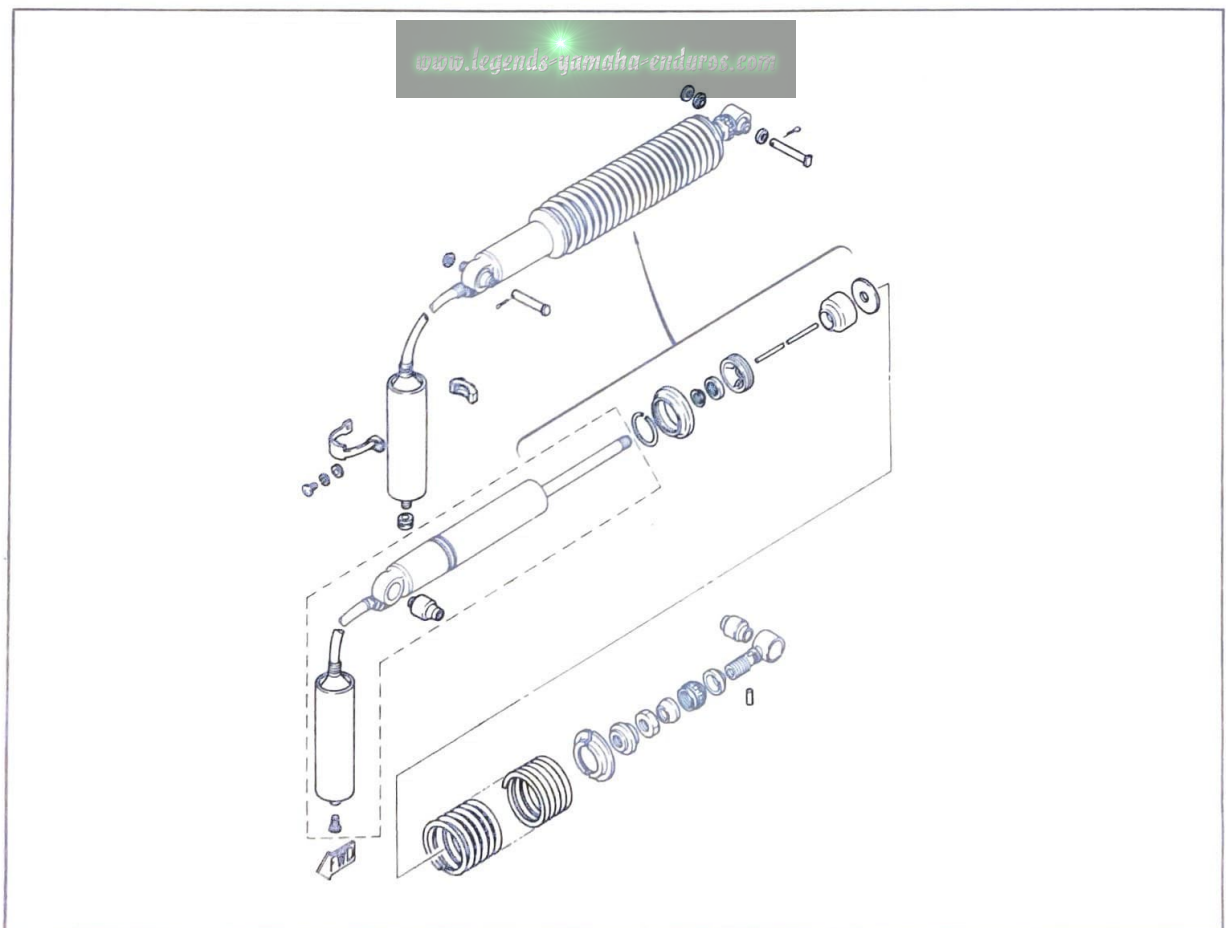
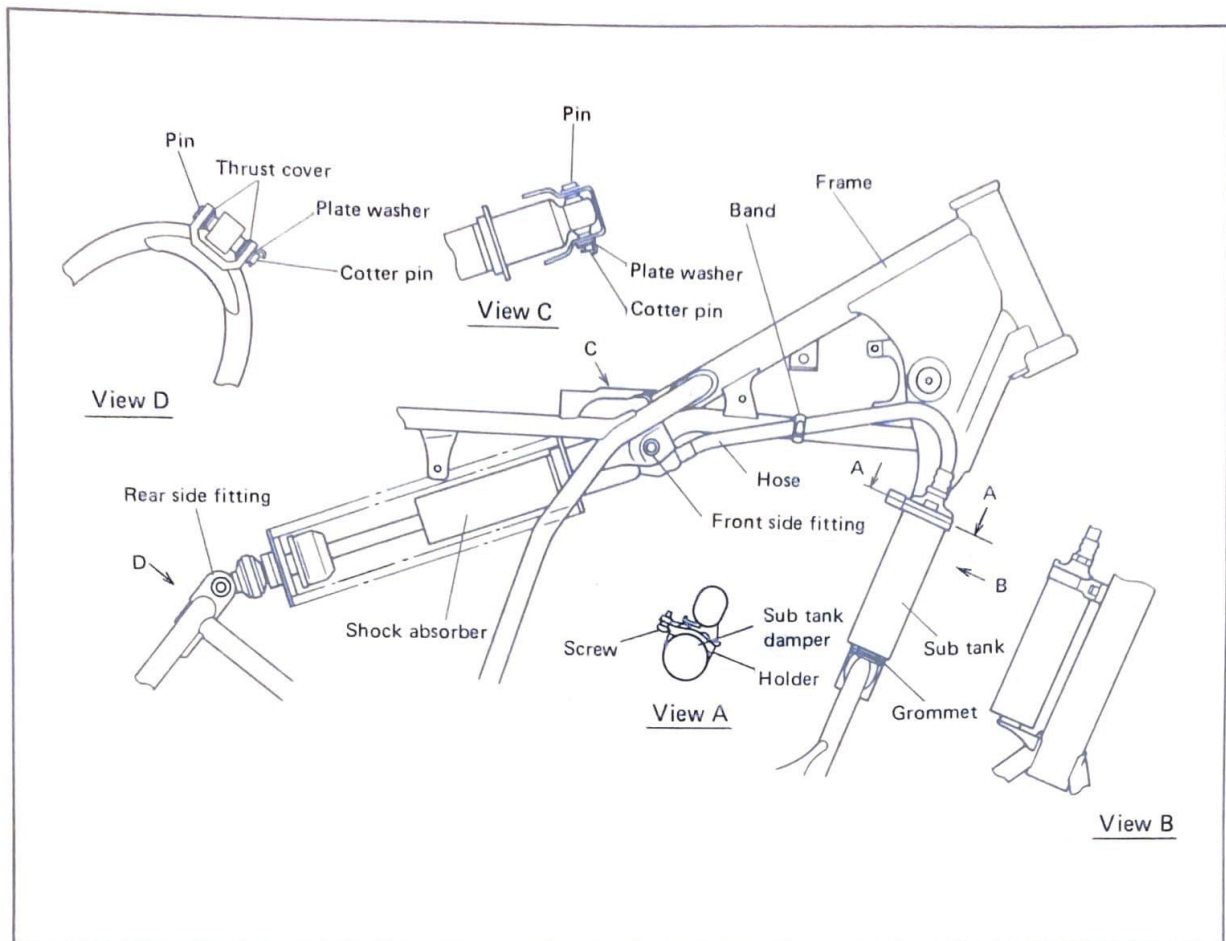
When removing the shock absorber, take the following precautions:

1. Take care not to damage the gas tank.
2. Do not damage the rubber hose.



7. For assembly, reverse the procedure for disassembly while taking the following precautions:
  - a. Be sure that the shock absorber is installed as illustrated.
  - b. Always use a new cotter pin.
  - c. Grease the PIN and thrust washer.

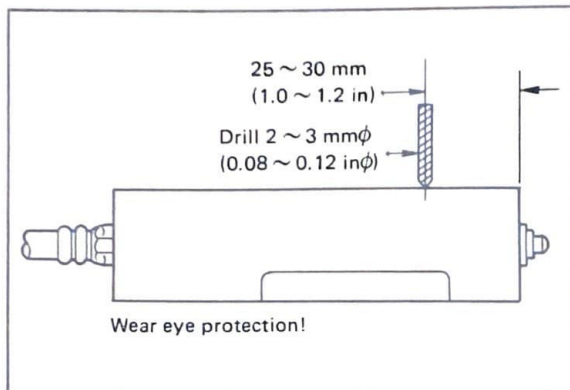






### Notes on disposal (Yamaha dealers only)

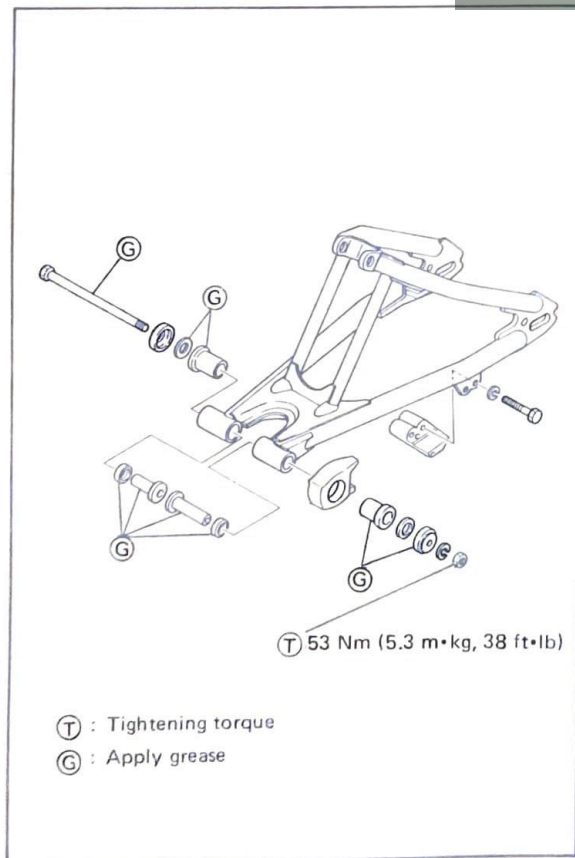
Before disposing the shock absorber, be sure to extract the nitrogen gas. To do so, drill a 2 or 3 mm (0.08 ~ 0.12 in) hole through the tank at a position 25 ~ 30 mm (1.0 ~ 1.2 in) from the bottom end of the tank. At this time, wear eye protection to prevent eye damage from escaping gas and/or metal chips.



### WARNING:

To dispose of a damaged or worn-out shock absorber, take the unit to your Yamaha dealer for this disposal procedure.

## SWINGARM



### Inspection

1. To check the swingarm, remove the rear wheel and disconnect the shock from the swingarm.
2. Grasp the ends of the swingarm and try to move the arm sideways; if the free play exceeds tolerance, remove the swingarm and take it to your Yamaha dealer for bearing replacement.

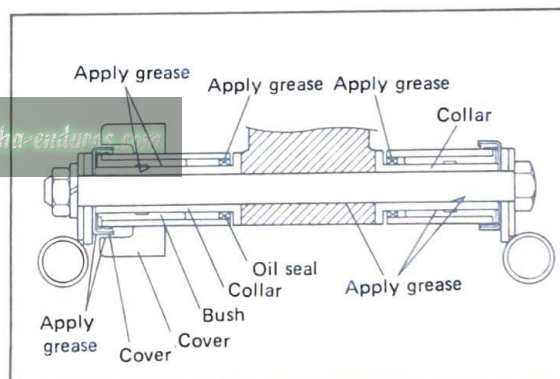
Swingarm free play:

0 ~ 1 mm (0. ~ 0.04 in)

3. Closely inspect the swingarm for cracks or other damage, and repair or replace it as required.
4. When reinstalling the swingarm, be sure to grease the bushings, and oil seal lips.
5. Grease the pivot shaft, install it and its nut, and torque the nut to specification.

Pivot shaft nut torque:

53 Nm (5.3 m·kg, 38 ft·lb)



## **6** ELECTRICAL TROUBLESHOOTING

IGNITION SYSTEM .....	6-1
WIRING DIAGRAM .....	6-4

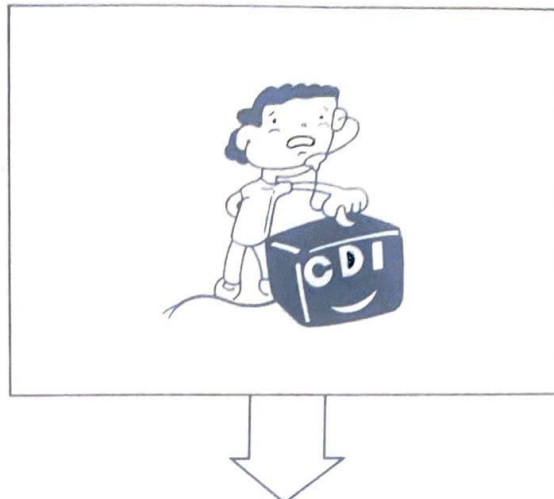
[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)

## 6 ELECTRICAL TROUBLESHOOTING

### IGNITION SYSTEM

#### Troubleshooting

If the ignition spark is of poor quality or if there is no spark at all, use the following procedure, to locate and repair the problem.



#### 1 Spark gap test

Remove the spark plug cap and check the spark.



Hold the high tension lead 5 mm (0.20 in) from the head, and kick the engine through.

Good  
spark

1. Check plug cap.
2. Check spark plug.

No  
spark

#### 2 Connectors check-up

1. Check the connectors and couplers for looseness of joining ends.
2. Keep the connectors and couplers from dirt or rust.
3. Check the engine stop switch and ground lead.

Poor  
connection

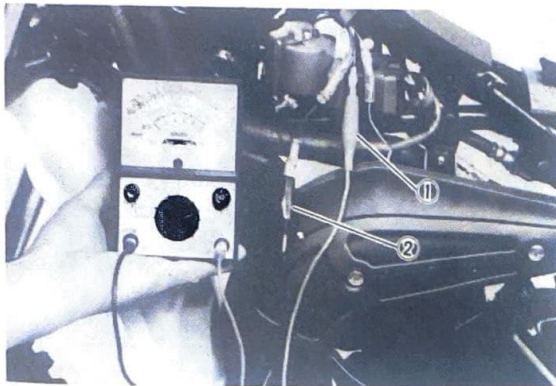
- Clean
- Correct

OK



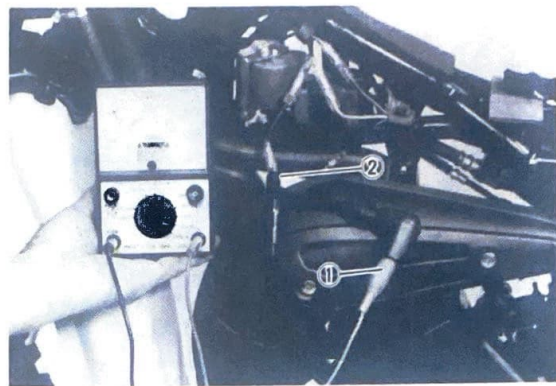
### 3 Ignition coil test

Use the pocket tester to check the resistance of primary and secondary windings of the ignition coil.



1. Orange 2. Black

Primary coil resistance:  
 $0.6 \Omega \pm 10\%$



1. Spark plug lead 2. Black

Secondary coil resistance:  
 $6.2 \text{ k}\Omega \pm 20\%$

OK

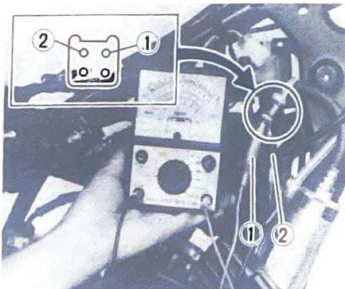
If other than  
specified

Replace  
ignition coil

[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)

### 4 C.D.I. Magnet (Charge coil) test

Disconnect the red, and brown leads, and use the pocket tester to check the resistance of the magneto coil.



1. Brown 2. Red

Brown to Red:  
 $1,437 \Omega \pm 10\%$

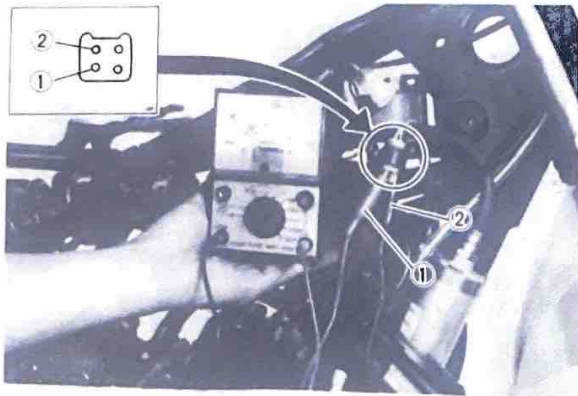
OK

If other than  
specified

Replace coil and  
check performance.

## 5 C.D.I. Magneto (Pick-up coil) test

Disconnect the red, white/red leads, and use the pocket tester to check the resistance of the magneto coils.



1. White/Red 2. Red

White/Red to Red:  
 $500 \Omega \pm 10\%$

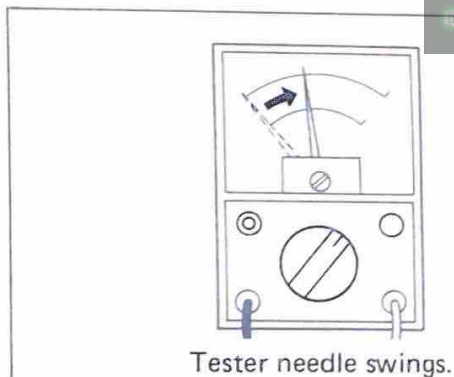
OK

If other than  
specified

Replace coil and  
check performance

## 6 C.D.I. Unit test

Disconnect the orange lead, and connect the pocket tester leads as shown. Check output voltage.



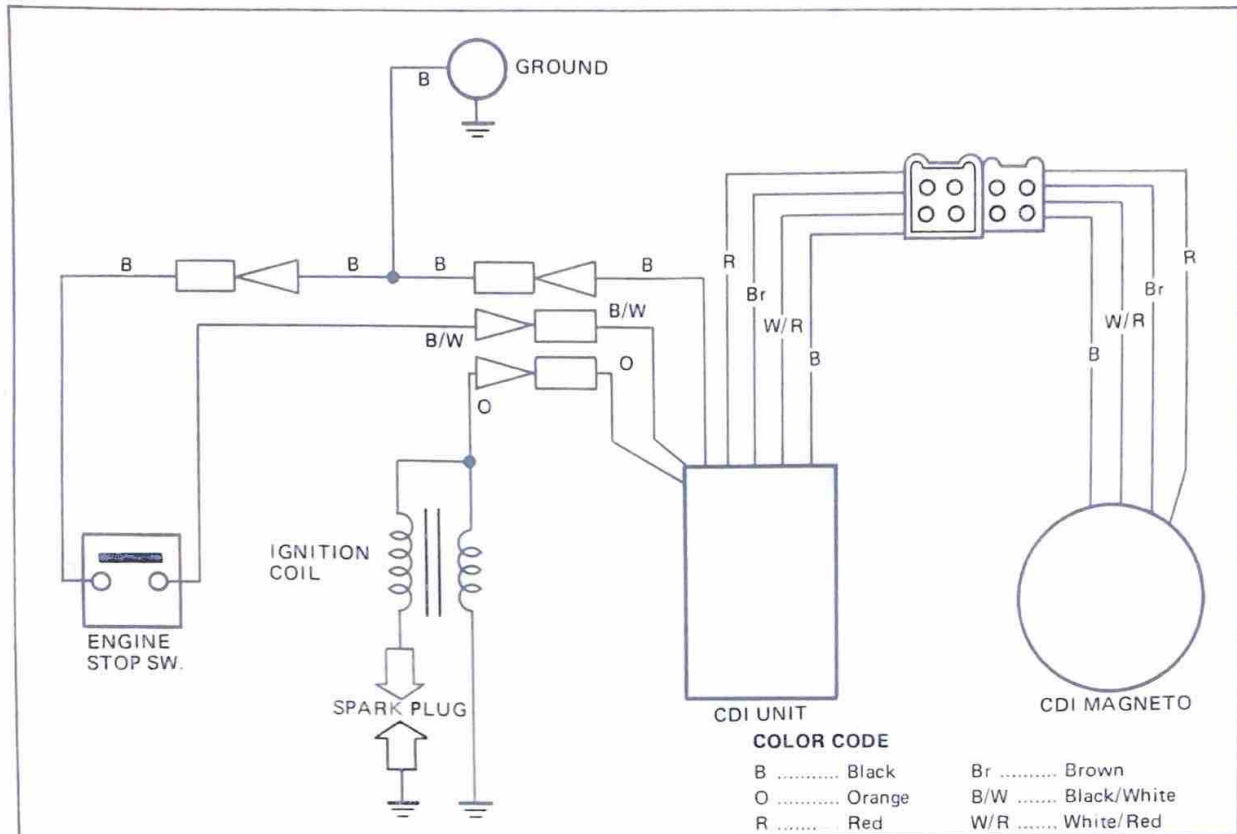
OK

If other than  
specified.

Replace  
unit



## WIRING DIAGRAM



[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)



## 7 APPENDICES

<b>TROUBLESHOOTING GUIDE</b> .....	7-1
Engine is hard to start or does not start .....	7-1
Poor high speed performance .....	7-2
Overheating .....	7-3
Transmission and shifter .....	7-3
Clutch .....	7-4
Chassis .....	7-4
<b>SPECIFICATIONS</b> .....	7-6
General .....	7-6
Engine .....	7-8
Chassis .....	7-10
Electrical .....	7-12
Torque specifications .....	7-13
<b>DEFINITION OF UNITS</b> .....	7-14
<b>CONVERSION TABLES</b> .....	7-14
<b>CABLE ROUTING DIAGRAM</b> .....	7-15
<b>WARRANTY INFORMATION</b> .....	7-18

[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)

## TROUBLESHOOTING GUIDE

Engine is hard to start or does not start.

Ignition System	
Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Spark plug is wet.</li> <li>2. Ignition coil is faulty.</li> <li>3. C.D.I. unit is faulty.</li> <li>4. C.D.I. magneto is faulty (Pick-up coil, charge coil)</li> <li>5. Ignition timing is incorrect.</li> <li>6. Wire is broken, shorted or disconnected.</li> <li>7. Engine stop switch is shorted.</li> </ol>	<ul style="list-style-type: none"> <li>• Clean or replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Adjust</li> <li>• Repair, replace or connect</li> <li>• Repair or replace</li> </ul>
Compression System	
Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Piston rings are sticking or worn.</li> <li>2. Cylinder or piston is worn or scratched.</li> <li>3. Compression leaks passing cylinder head gasket. (Head is distorted.)</li> <li>4. Crankshaft side oil seal is faulty.</li> <li>5. Air leaks through crankcase sealing surfaces.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Repair or replace</li> <li>• Replace (or repair)</li> <li>• Replace</li> <li>• Repair</li> </ul>
Air/Fuel System	
Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Carburetor pilot jet is clogged.</li> <li>2. Fuel cock or pipe is clogged.</li> <li>3. Float valve is faulty. (Float height is too high or too low.)</li> <li>4. Reed valve is broken or deformed.</li> <li>5. Fuel tank filler cap or carburetor breather pipe is clogged.</li> <li>6. Air screw is improperly adjusted.</li> <li>7. Fuel is deteriorated.</li> <li>8. Oil-gas mixing ratio is incorrect.</li> <li>9. Air leaks through carburetor joints.</li> </ol>	<ul style="list-style-type: none"> <li>• Clean</li> <li>• Clean</li> <li>• Replace (remove gasoline from crankcase)</li> <li>• Replace</li> <li>• Clean</li> <li>• Adjust</li> <li>• Replace</li> <li>• Replace</li> <li>• Retighten or replace gasket</li> </ul>

## Poor high speed performance

Ignition System	
Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Spark plug is dirty or plug gap is too narrow.</li> <li>2. C.D.I. unit is faulty.</li> <li>3. C.D.I. magneto is faulty.</li> <li>4. Ignition coil is faulty.</li> <li>5. Ignition timing is incorrect.</li> <li>6. Loose wire connection.</li> </ol>	<ul style="list-style-type: none"> <li>• Clean, repair or replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Adjust</li> <li>• Repair</li> </ul>
Compression System	
Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Piston rings are sticking or worn.</li> <li>2. Cylinder or piston is worn or scratched.</li> <li>3. Compression leakage through crankcase sealing surfaces or crankshaft side oil seal.</li> <li>4. Carbon deposits in combustion chamber (Piston, Cylinder head).</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Repair or replace</li> <li>• Repair or replace</li> <li>• Decarbonize</li> </ul>
Air/Fuel System	
Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Clogged carburetor jets.</li> <li>2. Improperly adjusted main jet (High speed).</li> <li>3. Improperly adjusted jet needle (Medium speed).</li> <li>4. Incorrect fuel lever</li> <li>5. Dirty or clogged air cleaner element</li> <li>6. Clogged fuel tank filler cap or carburetor breather pipe.</li> <li>7. Clogged fuel cock or kinked fuel pipe.</li> <li>8. Deteriorated fuel.</li> <li>9. Improper oil-gas mixing ratio</li> <li>10. Cracked or broken exhaust pipe (Leakage of exhaust gases).</li> </ol>	<ul style="list-style-type: none"> <li>• Clean</li> <li>• Adjust</li> <li>• Adjust</li> <li>• Adjust</li> <li>• Clean</li> <li>• Clean</li> <li>• Clean or repair</li> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> </ul>



## Overheating

Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Incorrect air-fuel mixture</li> <li>2. Air leaks through carburetor joint.</li> <li>3. Incorection ignition timing</li> <li>4. Carbon builds up in cylinder head or on piston head.</li> <li>5. Improper spark plug heat range (too hot).</li> <li>6. Fuel is deteriorated or oil-gas mixing ratio is incorrect.</li> </ol>	<ul style="list-style-type: none"> <li>• Adjust</li> <li>• Repair or replace</li> <li>• Adjust</li> <li>• Decarbonize</li> <li>• Replace</li> <li>• Replace</li> </ul>

Overheating	
Possible cause	Remedy
<ol style="list-style-type: none"> <li>1. Coolant of inferior quality.</li> <li>2. Coolant level is low.</li> <li>3. Water pump is faulty.</li> <li>4. Cooling passage is clogged.</li> <li>5. Radiator is clogged.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace with specified type.</li> <li>• Add upto specified line.</li> <li>• Repair or replace.</li> <li>• Clean passage.</li> <li>• Clean radiator.</li> </ul>
Low coolant level	
<ol style="list-style-type: none"> <li>1. Radiator is leaky.</li> <li>2. Hose is damaged or joint is loose.</li> <li>3. Steering head is leaky.</li> <li>4. Water pump cover is leaky.</li> <li>5. Cylinder head O-ring is faulty.</li> </ol>	<ul style="list-style-type: none"> <li>• Repair or replace.</li> <li>• Replace hose or retighten joint.</li> <li>• Retighten steering nut or replace oil seal.</li> <li>• Repair or replace.</li> <li>• Replace</li> </ul>

## Transmission and shifter

Trouble	Possible Cause	Remedy
Gears slip off	<ol style="list-style-type: none"> <li>1. Gear dogs are worn.</li> <li>2. Shift forks are bent. (burnt or worn)</li> <li>3. Shift cam stopper spring is fatigued.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> </ul>
Gear shifts skipping over the next.	<ol style="list-style-type: none"> <li>1. Shift cam stopper spring is fatigued.</li> <li>2. Shift forks are bent. (burnt or worn)</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Replace</li> </ul>
Gear does not shift correctly.	<ol style="list-style-type: none"> <li>1. Shift cam is worn. (broken)</li> <li>2. Change shaft is bent.</li> <li>3. Shift arm spring is broken.</li> <li>4. Gears are broken.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> </ul>
Shift pedal does not return.	<ol style="list-style-type: none"> <li>1. Change return spring is broken.</li> <li>2. Change shaft is bent.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Replace</li> </ul>

## Clutch

Trouble	Possible Cause	Remedy
Clutch slips	<ol style="list-style-type: none"> <li>1. Friction plate is worn.</li> <li>2. Clutch plate is worn.</li> <li>3. Clutch spring is fatigued.</li> <li>4. Pressure plate is deformed.</li> <li>5. Clutch play is too small.</li> <li>6. Clutch adjustment is incorrect.</li> <li>7. Match marks of clutch boss and pressure plate are not aligned.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Adjust</li> <li>• Adjust</li> <li>• Reassemble</li> </ul>
Clutch drags	<ol style="list-style-type: none"> <li>1. Clutch plate is warped.</li> <li>2. Clutch lock nut is loosen.</li> <li>3. Friction plate is broken.</li> <li>4. Clutch play is too much.</li> <li>5. Oil viscosity is incorrect.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Replace</li> <li>• Replace</li> <li>• Adjust</li> <li>• Replace</li> </ul>

## Chassis

Steering head is loose		
Possible Cause		Remedy
1. Roller is worn. 2. Steering lock nut is loose.		<ul style="list-style-type: none"><li>• Replace</li><li>• Retighten</li></ul>
Wheels have excessive run-out		
Possible Cause		Remedy
1. Bearing is worn. 2. Rim has dent. 3. Spokes are loose (or broken). 4. Axle nut is loose.		<ul style="list-style-type: none"><li>• Replace</li><li>• Repair or replace</li><li>• Retighten or replace</li><li>• Retighten</li></ul>
Brakes		
Problem	Possible Cause	Remedy
Faulty	1. Brake shoes are worn. 2. Brake is improperly adjusted. 3. Brake drum contains water. 4. Lining is greasy.	<ul style="list-style-type: none"><li>• Replace</li><li>• Adjust</li><li>• Clean</li><li>• Degrease or replace</li></ul>
Not return smoothly	1. Wire is starved for oil. 2. Camshaft is starved for grease. 3. Return spring or brake shoe spring is broken. 4. Brake pedal axle is starved for grease.	<ul style="list-style-type: none"><li>• Grease or replace</li><li>• Grease</li><li>• Replace</li><li>• Grease</li></ul>

Frame and Swing Arm	
Possible Cause	Remedy
<ol style="list-style-type: none"> <li>1. Frame is cracked.</li> <li>2. Rear arm is bent.</li> <li>3. Rear arm is cracked.</li> <li>4. Bushing is worn.</li> </ol>	<ul style="list-style-type: none"> <li>• Weld, reinforce or replace</li> <li>• Repair or replace</li> <li>• Replace</li> <li>• Replace</li> </ul>

[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)



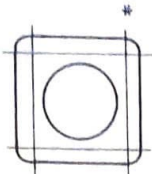
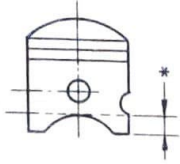
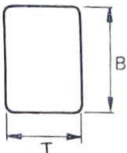
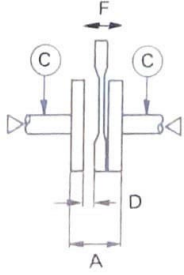
## SPECIFICATIONS

### GENERAL

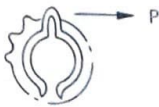
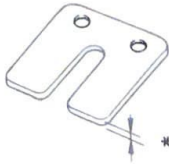
Item	YZ80J
<b>Model:</b> Code Number Frame Starting Number Engine Starting Number	5X2 5X2-000101 5X2-000101
<b>Dimensions:</b> Overall Length Overall Width Overall Height Seat Height Wheelbase Minimum Ground Clearance	1,790 mm (70.5 in) 765 mm (30.1 in) 1,040 mm (40.9 in) 780 mm (30.7 in) 1,230 mm (48.4 in) 270 mm (10.6 in)
<b>Basic Weight:</b> With Oil and Full Fuel Tank	67 kg (147 lb)
<b>Engine:</b> Engine Type Cylinder Arrangement  Displacement: Bore x Stroke Compression Ratio Starting System	Liquid cooled 2-stroke, gasoline, torque induction Single Forward inclined 79 cm <sup>3</sup> (4.82 cu.in) 47 x 45.6 mm (1.85 x 1.80 in) 7.5 : 1 Primary kick starter
<b>Lubrication System:</b>	Premix (24 : 1) (Yamalube R) Premix (20 : 1) (Castrol R30)
<b>Oil Type or Grade:</b> Engine Oil Transmission Oil	Yamalube 2-cycle oil or Air cooled 2-stroke engine oil Yamalube 4-cycle oil or SAE 10W30 type SE motor oil
<b>Transmission Oil:</b> Periodic Oil Change Total Amount	0.625 ~ 0.675 L (0.55 ~ 0.59 Imp qt, 0.66 ~ 0.71 US qt) 0.675 ~ 0.725 L (0.59 ~ 0.64 Imp qt, 0.71 ~ 0.77 US qt)
<b>Radiator Capacity (Including All Routes):</b>	1.1 L (1.0 Imp qt, 1.2 US qt)
<b>Air Filter :</b>	Wet type element
<b>Fuel:</b> Type Tank Capacity	Premium gasoline 5.2 L (1.1 Imp gal, 1.4 US gal)
<b>Carburetor:</b> Type Manufacturer	VM-26SS MIKUNI
<b>Spark Plug:</b> Type Manufacturer Gap	N-2C CHAMPION 0.7 ~ 0.8 mm (0.028 ~ 0.031 in)

Item	YZ80J
Clutch Type:	Wet, multiple-disc
Transmission: Primary Reduction System Primary Reduction Ratio Secondary Reduction System Secondary Reduction Ratio Transmission Type Operation Gear Ratio:   1st 2nd 3rd 4th 5th 6th	Helical gear 66/21 (3.143) Chain drive 44/13 (3.385) Constant mesh, 6-speed, Cam drum Left foot operation 36/13 (2.769) 33/16 (2.062) 31/19 (1.631) 28/21 (1.333) 23/20 (1.150) 25/24 (1.042)
Chassis: Frame Type Caster Angle Trail	Semi double cradle 26° 80 mm (3.15 in)
Tire: Type Size (F) Size (R)	With tube 2.75-17-4 PR 4.10-14-4 PR
Tire Pressure: Front Rear	98.1 kPa (1.0 kg/cm <sup>2</sup> , 14 psi) 98.1 kPa (1.0 kg/cm <sup>2</sup> , 14 psi)
Brake: Front Brake Type Operation Rear Brake Type Operation	Drum brake Right hand operation Drum brake Right foot operation
Suspension: Front Suspension Rear Suspension	Telescopic fork Swingarm (Monocross suspension)
Shock Absorber: Front Shock Absorber Rear Shock Absorber	Coil spring, Air, Oil damper Gas, Coil spring, Oil damper
Wheel Travel: Front Wheel Travel Rear Wheel Travel	225 mm (8.9 in) 230 mm (9.1 in)
Electrical: Ignition System Generator System	C.D.I. Magneto Flywheel magneto

## ENGINE

Item	YZ80J																				
Cylinder Head: Warp Limit 	0.03 mm (0.0012 in) * Lines indicate straightedge measurement.																				
Cylinder: Bore Size Taper Limit Out of Round Limit	47 $\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$ mm (1.85 $\begin{smallmatrix} +0.0008 \\ 0 \end{smallmatrix}$ in) 0.05 mm (0.0020 in) 0.01 mm (0.0004 in)																				
Piston: Piston Size Nominal/ Measuring Point* Piston Clearance  Oversize    1st 2nd 3rd 4th Piston offset	 ▲ 47 mm (1.85 in)/26.4 mm (1.04 in) 0.060 ~ 0.065 mm (0.0024 ~ 0.0026 in)  47.25 mm (1.86 in) 47.50 mm (1.87 in) 47.75 mm (1.88 in) 48.00 mm (1.89 in) 1 mm (0.039 in), EX-Side																				
Piston Ring: Sectional Sketch  End Gap (Installed) Side Clearance (Installed)	<table border="0"> <tr> <td>Top Ring</td><td>Plain</td></tr> <tr> <td></td><td>B = 1.9 mm (0.085 in)</td></tr> <tr> <td></td><td>T = 1.0 mm (0.039 in)</td></tr> <tr> <td>2nd Ring</td><td>Plain</td></tr> <tr> <td></td><td>B = 1.9 mm (0.085 in)</td></tr> <tr> <td></td><td>T = 1.0 mm (0.039 in)</td></tr> </table> <table border="0"> <tr> <td>Top Ring</td><td>0.20 ~ 0.40 mm (0.008 ~ 0.016 in)</td></tr> <tr> <td>2nd Ring</td><td>0.20 ~ 0.40 mm (0.008 ~ 0.016 in)</td></tr> <tr> <td>Top Ring</td><td>0.04 ~ 0.08 mm (0.0016 ~ 0.0031 in)</td></tr> <tr> <td>2nd Ring</td><td>0.04 ~ 0.08 mm (0.0016 ~ 0.0031 in)</td></tr> </table>	Top Ring	Plain		B = 1.9 mm (0.085 in)		T = 1.0 mm (0.039 in)	2nd Ring	Plain		B = 1.9 mm (0.085 in)		T = 1.0 mm (0.039 in)	Top Ring	0.20 ~ 0.40 mm (0.008 ~ 0.016 in)	2nd Ring	0.20 ~ 0.40 mm (0.008 ~ 0.016 in)	Top Ring	0.04 ~ 0.08 mm (0.0016 ~ 0.0031 in)	2nd Ring	0.04 ~ 0.08 mm (0.0016 ~ 0.0031 in)
Top Ring	Plain																				
	B = 1.9 mm (0.085 in)																				
	T = 1.0 mm (0.039 in)																				
2nd Ring	Plain																				
	B = 1.9 mm (0.085 in)																				
	T = 1.0 mm (0.039 in)																				
Top Ring	0.20 ~ 0.40 mm (0.008 ~ 0.016 in)																				
2nd Ring	0.20 ~ 0.40 mm (0.008 ~ 0.016 in)																				
Top Ring	0.04 ~ 0.08 mm (0.0016 ~ 0.0031 in)																				
2nd Ring	0.04 ~ 0.08 mm (0.0016 ~ 0.0031 in)																				
Crankshaft:   Crank Width "A"	   45 $\begin{smallmatrix} -0.05 \\ -0.10 \end{smallmatrix}$ mm (1.77 $\begin{smallmatrix} -0.0020 \\ -0.0040 \end{smallmatrix}$ in)																				



Item	YZ80J
Run Out Limit "C"	0.03 mm (0.0012 in)
Connecting Rod Big End Side Clearance "D"	0.2 ~ 0.7 mm (0.008 ~ 0.028 in)
Small End Free Play Limit "F"	2.0 mm (0.08 in)
Clutch:	
Friction Plate Thickness/Quantity	3.0 mm (0.12 in) x 5
Wear Limit	2.7 mm (0.11 in)
Clutch Plate Thickness/Quantity	1.2 mm (0.05 in) x 4
Warp Limit	0.05 mm (0.002 in)
Clutch Spring Free Length/Quantity	31.5 mm (1.24 in) x 4
Clutch Housing Thrust Clearance	0.1 ~ 0.35 mm (0.004 ~ 0.014 in)
Clutch Housing Radial Clearance	0.022 ~ 0.051 mm (0.0009 ~ 0.0020 in)
Primary Reduction Gear	
Backlash Tolerance	133 ± 1
Clutch Release Method	Inner push, cam axle type
Push Rod Bending Limit	0.15 mm (0.006 in)
Shifter:	
Shifting Type	Cam drum
Kick Starter Type:	
Kick Clip Friction Force	Kick and mesh type P = 1.0 kg (2.2 lb)
	
Carburetor:	
Type/Manufacturer/Quantity	VM-26SS/MIKUNI/1 pc.
I.D. Mark	5X200
Main Jet (M.J.)	#210
Main Air Jet (M.A.J.)	φ0.5
Jet Needle-clip Position (J.N.)	4J13-3
Needle Jet (N.J.)	0-0
Cutaway (C.A.)	2.0
Pilot Jet (P.J.)	#35
Pilot Outlet Size (P.O.)	φ0.6
Air Screw (turns out) (P.A.S.)	1.0
Valve Seat Size (V.S.)	φ2.5
Starter Jet (G.S.)	40
Float Height (F.H.)	21.0 ± 1 mm (0.83 ± 0.039 in)
Engine Idling Speed	1,500 r/min
Reed Valve:	
Material	G1N6
Thickness*	0.203 mm (0.008 in)
Valve Lift	8.3 mm (0.33 in)
Bending Limit	0.3 mm (0.012 in) or less
	

## Tightening Torque

	Thread Size	Q'ty	Nm	m•kg	ft•lb
Spark plug	M14	1	25	2.5	18
Cylinder head – Nut	M8	4	30	3.0	22
Cylinder – Drain bolt	M6	1	10	1.0	7.2
Housing cover – Frange bolt	M6	1	10	1.0	7.2
– Panhead screw	M6	3	10	1.0	7.2
Joint – Panhead screw	M6	2	10	1.0	7.2
Manifold – Bolt	M6	4	10	1.0	7.2
Muffler – Nut	M8	2	18	1.8	13
Crankcase – Panhead screw	M6	9	13	1.3	9.4
Crankcase cover – Panhead screw (L)	M6	3	10	1.0	7.2
– Panhead screw (R)	M6	7	10	1.0	7.2
Drain plug	M12	1	20	2.0	14
Kick starter	M10	1	35	3.5	25
Primary drive gear	M12	1	68	6.8	49
Driven gear – Clutch housing	M12	1	50	5.0	36
Clutch spring	M5	4	6	0.6	4.3
Stopper lever	M6	1	14	1.4	10
Charge lever	M6	1	10	1.0	7.2

## CHASSIS

Item	YZ80J
Steering System:	
Steering Bearing Type	Ball Bearing
No./Size of Steel Balls	3/16 pcs/22 in
Upper	
Lower	1/4 pcs/19 in
Front Suspension:	
Front Fork Travel	225 mm (8.86 in)
Fork Spring Free Length	564.7 mm (22.3 in)
	Limit: 334.7 mm (13.2 in)
Spring Rate/Stroke	K <sub>1</sub> = 2.207 N/mm (0.225 kg/mm, 12.60 lb/in)
	0 ~ 230 mm (0 ~ 9.06 in)
Optional Spring	Yes
Spring Rate/Stroke	K <sub>1</sub> = 2.452 N/mm (0.25 kg/mm, 14.0 lb/in)
	0 ~ 230 mm (0 ~ 9.06 in)
Oil Capacity or Oil Level	188 cm <sup>3</sup> (6.6 Imp oz, 6.4 US oz)
	(From top of inner tube fully compressed without spring)
Oil Grade	Yamaha fork oil 20 wt SAE 20 motor oil
Enclosed Air Pressure	0 kPa (0 kg/cm <sup>2</sup> , 0 psi)
Rear Suspension:	
Shock Absorber Travel	112 mm (4.41 in)
Spring Free Length	283 mm (11.1 in)
	Limit: 146 mm (5.75 in)
Spring Rate/Stroke	K <sub>1</sub> = 23.5 N/mm (2.4 kg/mm, 134 lb/in)
	0 ~ 137 mm (0 ~ 5.39 in)
Optional Spring	Yes
Spring Rate/Stroke	K <sub>1</sub> = 26.0 N/mm (2.65 kg/mm, 148 lb/in)
	0 ~ 137 mm (0 ~ 5.39 in)
Enclosed Gas Pressure	1,177 kPa (12 kg/cm <sup>2</sup> , 171 psi)
Max. Min.	1422 ~ 1520 kPa
	(14.5 ~ 15.5 kg/cm <sup>2</sup> , 206 ~ 220 psi)

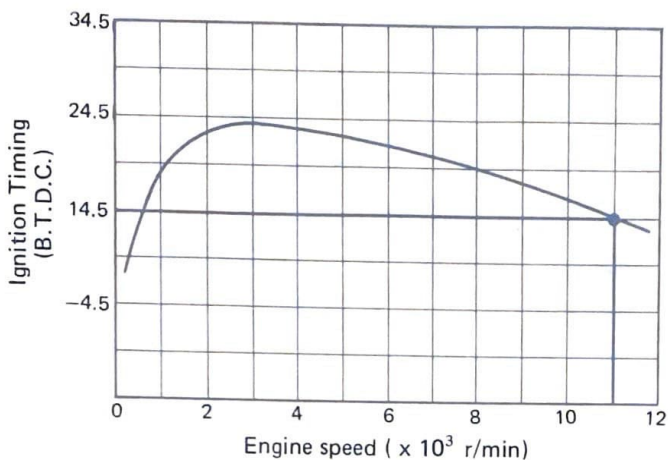
Item			YZ80J
Rear Arm:			
Swing Arm Free Play Limit	End Side		1.0 mm (0.040 in) 0.3 mm (0.012 in)
Wheel:			
Front Wheel Type			Spoke Wheel
Rear Wheel Type			Spoke Wheel
Front Rim Size/Material			1.40 x 17/Aluminum
Rear Rim Size/Material			1.60 x 14/Aluminum
Rim Runout Limit	Vertical		2.0 mm (0.08 in)
	Lateral		2.0 mm (0.08 in)
Drive Chain:			
Type/Manufacturer			DID428/DAIDO
Number of Links			110 links
Chain Free Play			15 ~ 20 mm (0.6 ~ 0.8 in)
Drum Brake:			
Type	Front		Leading trailing
	Rear		Leading trailing
Drum Inside Dia.	Front		95 mm (3.74 in)
			Limit: 1.5 mm (0.06 in)
	Rear		95 mm (3.74 in)
			Limit: 1.5 mm (0.06 in)
Brake Lever & Brake Pedal:			
Brake Lever Free Play			5 ~ 8 mm (0.20 ~ 0.31 in)
Brake Pedal Position			0 mm (0 in)
Brake Pedal Free Play			20 mm (0.8 in)
			(Vertical height below footrest top.)
Clutch Lever Free Play:			2 ~ 3 mm (0.08 ~ 0.12 in)

## Tightening Torque

	Thread Size	Q'ty	Nm	m•kg	ft•lb
Front wheel axle	M12	1	74	7.4	55
Front fender – Under bracket	M6	4	7	0.7	5.1
Brake cam lever – Bolt	M6	2	10	1.0	7.2
Handle crown – Steering	M22	1	12.5	12.5	90
– Inner tube	M8	2	18	1.8	13
– Handle holder	M8	4	27	2.7	19
Engine mounts – Front	M8	1	40	4.0	29
– Under	M8	1	40	4.0	29
Pivot shaft	M12	1	53	5.3	38
Footrest bracket (R) – Frame	M10	1	50	5.0	36
Rear wheel axle	M14	1	85	8.5	61
Rear hub – Stud bolt	M8	6	30	3.0	22
Sprocket – Nut	M8	6	26	2.6	19
Fuel tank – Holder damper (Front)	M6	4	7	0.7	5.1
– Frame (Front)	M6	2	7	0.7	5.1
– Screw (Rear)	M6	1	7	0.7	5.1
– Fuel cock	M6	2	7	0.7	5.1
Sidestand	M8	1	21	2.1	15
Rear fender – Frame	M8	2	17	1.7	12



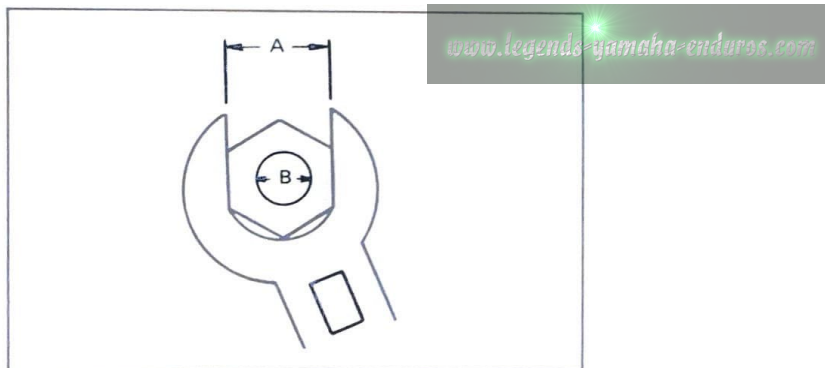
## ELECTRICAL

Item	YZ80J
Ignition System: Ignition Timing (B.T.D.C.) Advancer Type	14.5°/11,000 r/min, 0.83 mm (0.032 in) Electrical
 <p>The graph shows the relationship between engine speed and ignition timing. The y-axis represents Ignition Timing (B.T.D.C.) in degrees, ranging from -4.5 to 34.5. The x-axis represents Engine speed in units of 10<sup>3</sup> r/min, ranging from 0 to 12. The curve starts at approximately 10° at 0 r/min, rises to a peak of about 24.5° at 3 x 10<sup>3</sup> r/min, and then gradually decreases to 14.5° at 11 x 10<sup>3</sup> r/min. A horizontal line is drawn at 14.5°.</p>	
C.D.I.: Model/Manufacturer Pick up Coil Resistance (Color) Charging Coil Resistance (Color) C.D.I. Unit — Model/Manufacturer	M100-30A/HITACHI 500 $\Omega \pm 10\%$ at 20°C (68°F) (Red — White/Red) 1,437 $\Omega \pm 10\%$ at 20°C (68°F) (Red — Brown) TIA01-26A/HITACHI
Ignition Coil: Model/Manufacturer Minimum Spark Gap Primary Winding Resistance Secondary Winding Resistance	CM61-20CY/HITACHI 12 kV or more at 300 r/min 20 kV or more at 5,000 r/min 0.6 $\Omega \pm 10\%$ at 20°C (68°F) 6.2 k $\Omega \pm 20\%$ at 20°C (68°F)
Charging System:	Flywheel magneto

## TORQUE SPECIFICATIONS

The list below covers those stud/bolt sizes with standard I.S.O. pitch threads. Torque specifications for components with thread pitches other than standard are given within the applicable chapter. Torque specifications call for dry, clean threads. Components such as the cylinder or cylinder head should be at room temperature prior to torquing. A cylinder head or any other item with several fasteners should be torqued down in a cross-wise pattern in successive stages until torque specification is reached. The method is similar to installing an automobile wheel and will avoid warping the component.

A (Nut)	B (Bolt)	General torque specifications		
		Nm	m•kg	ft•lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94



- A. Distance across flats  
B. Outside thread diameter

## DEFINITION OF UNITS

Unit	Read	Definition	Measure
mm	millimeter	$10^{-3}$ meter	Length
cm	centimeter	$10^{-2}$ meter	Length
kg	kilogram	$10^3$ gram	Weight
N	Newton	$1 \text{ kg} \times \text{m/sec}^2$	Force
Nm	Newton meter	$\text{N} \times \text{m}$	Torque
$\text{m} \cdot \text{kg}$	Meter kilogram	$\text{m} \times \text{kg}$	Torque
Pa	Paskal	$\text{N/m}^2$	Pressure
N/mm	Newton per millimeter	N/mm	Spring rate
L	Liter	—	Volume or Capacity
$\text{cm}^3$	Cubic centimeter	—	
r/min	Rotation per minute	—	Engine speed

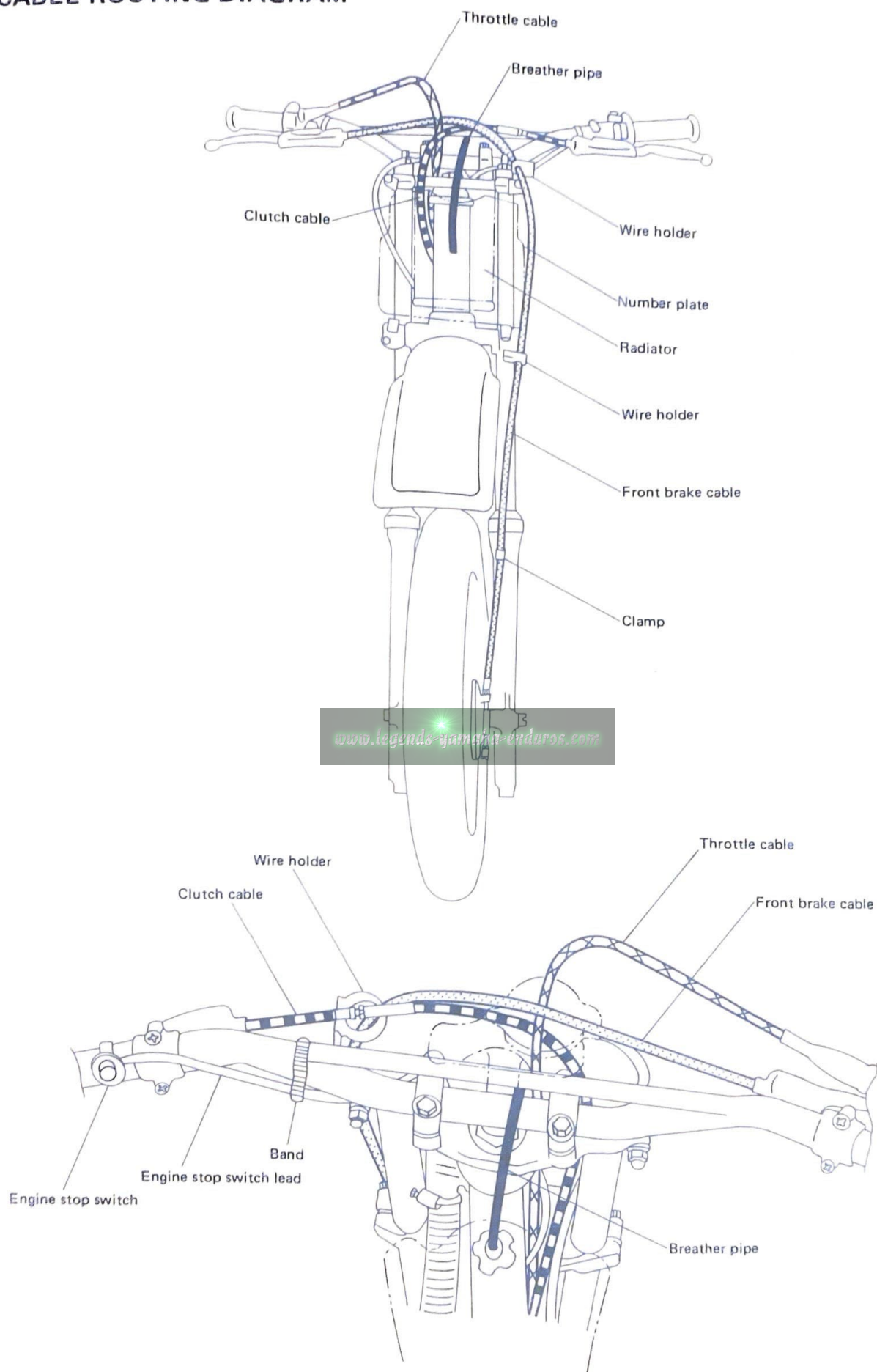
## CONVERSION TABLES

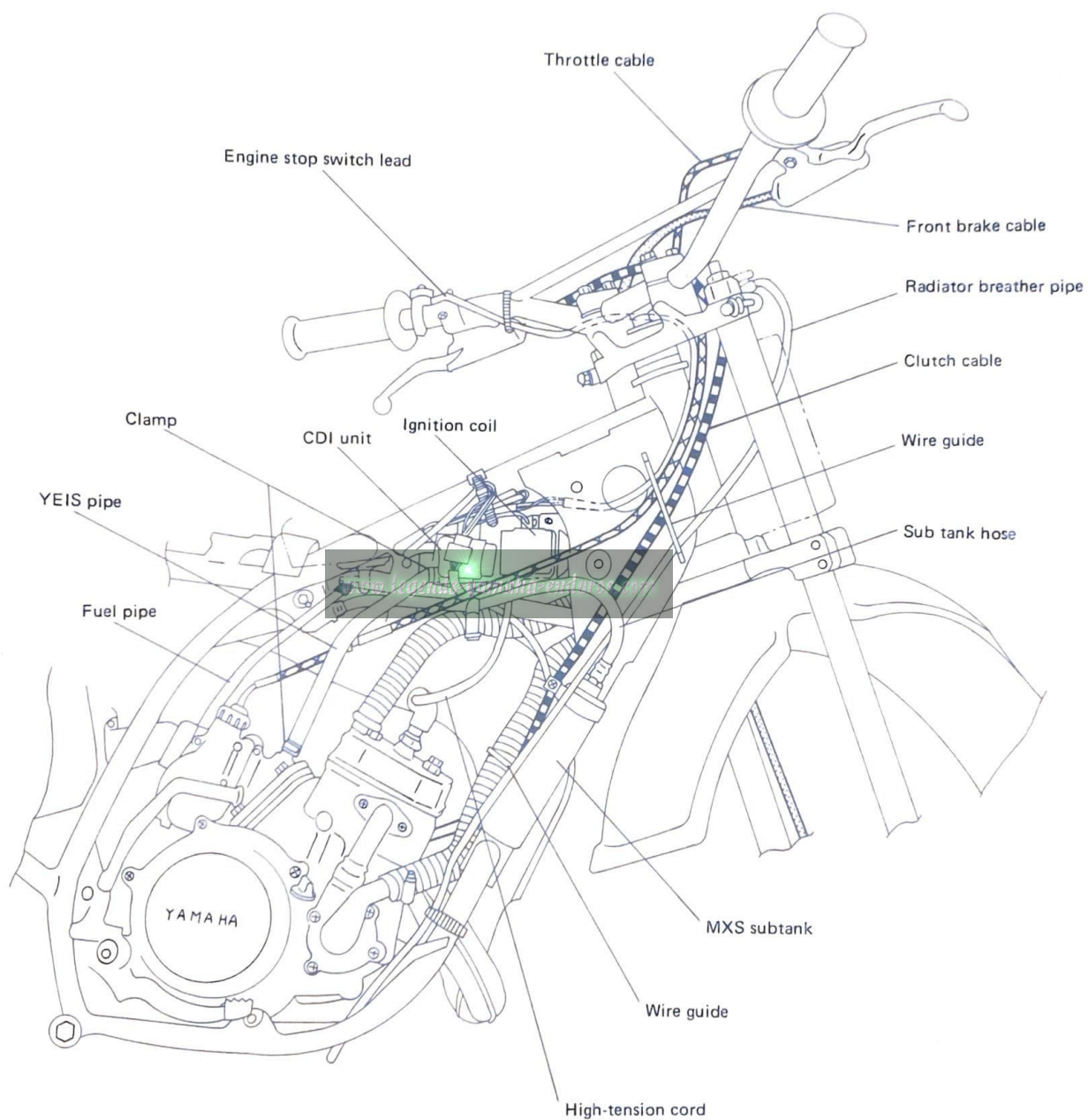
METRIC TO INCH SYSTEM			
	KNOWN	MULTIPLIER	RESULT
TORQUE	$\text{m} \cdot \text{kg}$	7.233	$\text{ft} \cdot \text{lb}$
	$\text{m} \cdot \text{kg}$	86.80	$\text{in} \cdot \text{lb}$
	$\text{cm} \cdot \text{kg}$	0.0723	$\text{ft} \cdot \text{lb}$
	$\text{cm} \cdot \text{kg}$	0.8680	$\text{in} \cdot \text{lb}$
	$\text{cm} \cdot \text{kg}$	0.8680	$\text{in} \cdot \text{lb}$
WT.	kg	2.205	lb
	g	0.03527	oz
FLOW/DISTANCE	km/lit	2.352	mpg
	km/hr	0.6214	mph
	km	0.6214	mi
	m	3.281	ft
	m	1.094	yd
	cm	0.3937	in
	mm	0.03937	in
VOL./CAPACITY	cc ( $\text{cm}^3$ )	0.03382	oz (US liq)
	cc ( $\text{cm}^3$ )	0.06102	cu.in
	lit (liter)	2.1134	pt (US liq)
	lit (liter)	1.057	qt (US liq)
	lit (liter)	0.2642	gal (US liq)
	lit (liter)	0.2642	gal (US liq)
MISC.	kg/mm	56.007	lb/in
	$\text{kg/cm}^2$	14.2234	psi ( $\text{lb/in}^2$ )
	Centigrade ( $^{\circ}\text{C}$ )	$9/5 (^{\circ}\text{C}) + 32$	Fahrenheit ( $^{\circ}\text{F}$ )

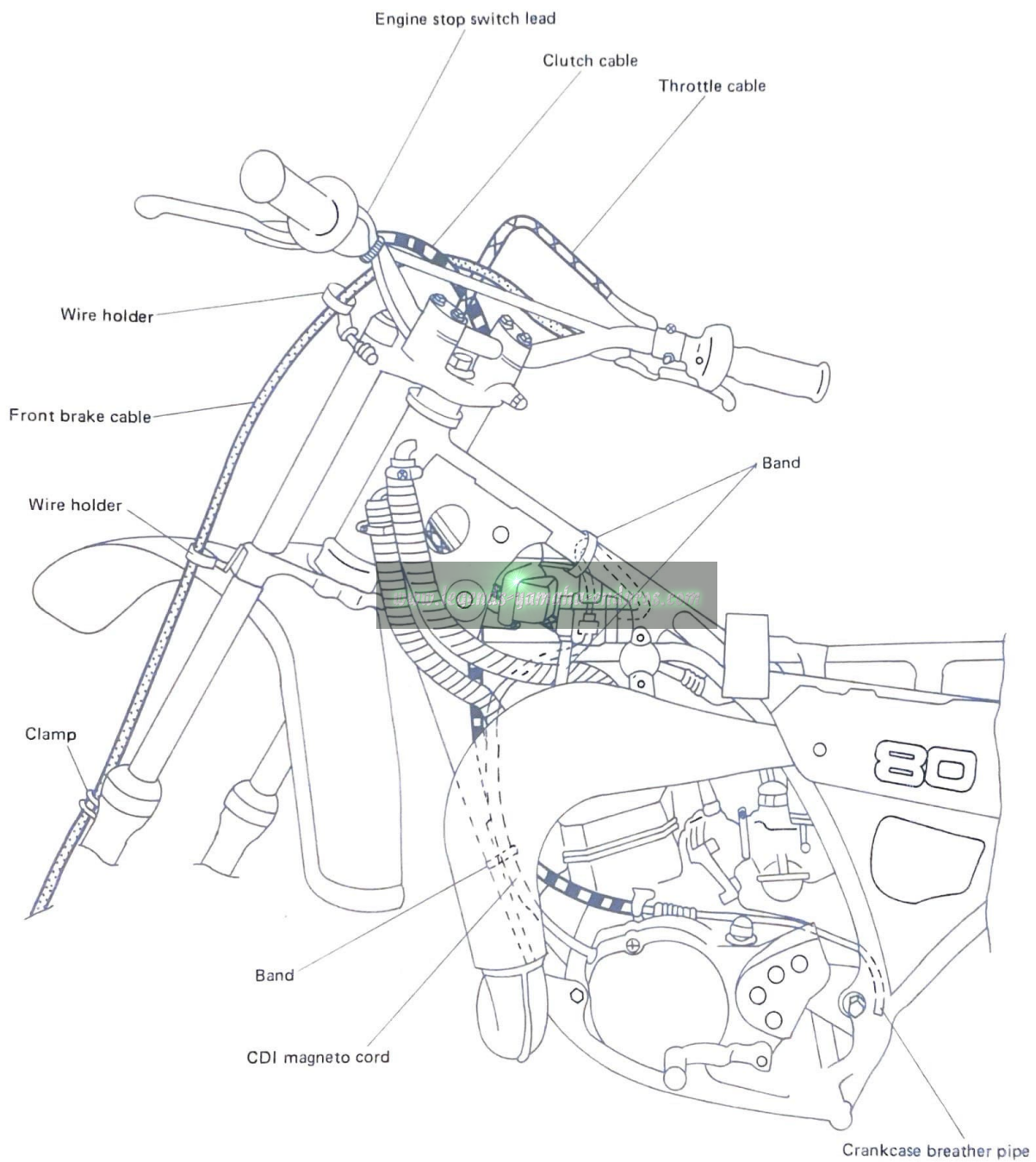
INCH TO METRIC SYSTEM			
	KNOWN	MULTIPLIER	RESULT
TORQUE	$\text{ft} \cdot \text{lb}$	0.13826	$\text{m} \cdot \text{kg}$
	$\text{in} \cdot \text{lb}$	0.01152	$\text{m} \cdot \text{kg}$
	$\text{ft} \cdot \text{lb}$	13.831	$\text{cm} \cdot \text{kg}$
	$\text{in} \cdot \text{lb}$	1.1521	$\text{cm} \cdot \text{kg}$
	$\text{in} \cdot \text{lb}$	1.1521	$\text{cm} \cdot \text{kg}$
WT.	lb	0.4535	kg
	oz	28.352	g
FLOW/DISTANCE	mpg	0.4252	km/lit
	mph	1.609	km/hr
	mi	1.609	km/hr
	ft	0.3048	m
	yd	0.9141	m
	in	2.54	cm
	in	25.4	mm
VOL./CAPACITY	oz (US liq)	29.57	cc ( $\text{cm}^3$ )
	cu.in	16.387	cc ( $\text{cm}^3$ )
	pt (US liq)	0.4732	lit (liter)
	qt (US liq)	0.9461	lit (liter)
	gal (US liq)	3.785	lit (liter)
	gal (US liq)	3.785	lit (liter)
MISC.	lb/in	0.017855	kg/mm
	psi ( $\text{lb/in}^2$ )	0.07031	$\text{kg/cm}^2$
	Fahrenheit ( $^{\circ}\text{F}$ )	$5/9 (^{\circ}\text{F}) - 32$	Centigrade ( $^{\circ}\text{C}$ )



## CABLE ROUTING DIAGRAM









## WARRANTY INFORMATION

### STATEMENT OF PURCHASER'S RESPONSIBILITY

This (model) Yamaha motorcycle is sold AS IS, WITHOUT ANY WARRANTIES EXPRESSED OR IMPLIED REGARDLESS OF THE INTENDED USE.

THE PURCHASER OF THIS MOTORCYCLE, which is intended for competition purposes, IS RESPONSIBLE FOR ALL COSTS OF SERVICE AND/REPAIR.

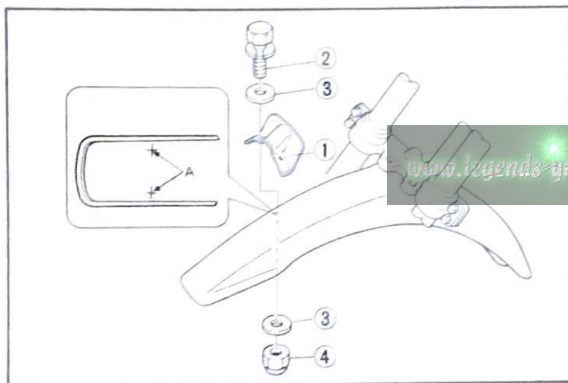
### INSTALLATION GUIDE

#### Fender plate

This fender plate prevents the number plate grille from clogging with mud. It should be used only when you ride the machine in the rain.

**NOTE:** \_\_\_\_\_

Don't use this plate when it is raining.



#### Parts list

No.	Part name	Q'ty	Locating mark	Remark
1	Fender plate	1	V	
2	Hexagon bolt with spring washer	2	V	d = 6 mm (0.24 in), ℓ = 16 mm (0.63 in)
3	Plain washer	4	V	d = 6 mm (0.24 in)
4	Self-locking nut	2	V	d = 6 mm (0.24 in)

#### Setup points

A: Drill two 6 mm (0.24 in) holes in the front fender with embossed crosses on the inside as a guide.

#### CAUTION:

While drilling holes, hold the front fender steady.

[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)



**YAMAHA MOTOR CO., LTD.**

IWATA JAPAN

PRINTED IN U.S.A.